Draft 10/10/2002

EPA Region 4

Assessment of the Ambient Air Monitoring Networks

I. EXECUTIVE SUMMARY

This Region 4 Network Assessment was begun after attending the July 26 - 27, 2001 National Monitoring Strategy meeting in Chicago, IL which presented the results from the National Network Assessment. EPA Regional Offices were again encouraged to perform their own network assessments through a June 12, 2002, memorandum from J. David Mobley. EPA Region 4 used the National Monitoring Assessment results and concepts as a starting point to begin the Region 4 Monitoring Assessment. EPA Region 4's Network Assessment addressed four major areas - a historical review of previous network modifications, a current assessment of network reduction possibilities, other findings which may provide our agencies with additional means to refocus monitoring resources, and an ozone season analysis that may provide monitoring resource savings. Current regulations, guidance, and the April 22, 1997, memorandum from William F. Hunt, Jr., concerning Ambient Monitoring Re-engineering were used to find potential reductions and optimizations in the CO, Pb, NO_2, PM_{10}, and SO_2 networks. Current guidance for selecting the ozone monitoring seasons was used as a starting point for assessing potential modifications to the existing ozone monitoring season. For the assessment of the O_3 and $PM_{2.5}$ networks, EPA Region 4 relied heavily upon spatial analyses as encouraged by the National Network Assessment, National Monitoring Strategy, and the May 21, 2002, memorandum, “Use of Spatial Data Analyses”.

As part of this Network Assessment, Region 4 offered to our state and local agencies an initial proposed list of 345 monitors (67% of the total CO, Pb, NO_2, PM_{10}, and SO_2 Region 4 network) that could be terminated. The state and local agencies agreed to terminate 74 of the 345 monitors (14.5% of the total CO, Pb, NO_2, PM_{10}, and SO_2 network). These terminations have already been completed or are planned to take place by December 31, 2002. Most monitoring reductions in the Region 4 CO, Pb, NO_2, PM_{10}, and SO_2 networks were found to be a result of regulatory or policy changes by EPA. Further reductions in these monitoring networks without this regulatory support will be limited because most of the remaining networks are already optimized.

Spatial analysis of O_3 and $PM_{2.5}$ design values show Region 4 to have broad scale violations for the 8-Hr O_3 and annual $PM_{2.5}$ NAAQS. Region 4 was found to have the largest population exposed to violations (99-01 data) of either the O_3 or $PM_{2.5}$ NAAQS, and also had significantly greater populations exposed than other regions to violations of both these pollutants. There is a significant discrepancy between the population exposure results produced from spatial analysis techniques compared to the population exposure results produced from methods currently utilized in the EPA Trends Report and Factbook. Due to the limited number of monitors that are deployed, EPA has historically assumed that if any monitor in an MSA or county was experiencing a violation, then anyone in that area is experiencing exposure to levels above the standard. Spatial analysis techniques for interpolating data offer a way to overcome this problem of limited monitors. Current EPA methods of representing exposed populations, those used in the Trends Report and Factbook, typically underestimate Region 4's population exposure by about 10 million people compared to spatial analysis techniques used in this assessment. These same EPA methods also overestimate population exposure in other Regions. If EPA Region 4 were to reduce the number of O_3 or $PM_{2.5}$ monitors in its ambient networks, as EPA wishes to do nationally by 5% to 25%, this bias between spatial analysis techniques and current EPA methods in expressing populations exposed to violations would be exacerbated. EPA needs to use these network assessments and spatial analyses as an opportunity to address monitoring disincentives. The EPA Trends Report and Factbook should begin using spatial analyses for estimating population exposure to violations of the O_3 and $PM_{2.5}$ NAAQS because current EPA methods do not effectively quantify exposed populations.

Spatial analyses also revealed the importance of rural monitoring sites to accurately mapping this type of information. Many of these rural monitoring sites which were found to be critical to conducting accurate spatial analyses from Region 4's Network Assessment were found by the National Assessment to be low value sites that contribute minimal interpolated bias from their removal from the monitoring network. Due to current regulatory requirements which emphasize the importance of monitoring for the purpose of demonstrating compliance with the NAAQS, current O_3 and $PM_{2.5}$ networks are typically focused into high population areas. This focus has caused less emphasis being placed on rural monitoring. Rural monitoring has been found by this assessment to be critical to performing accurate spatial analyses. If EPA wishes to support spatial analyses, as stated in memo “Use of Spatial Data Analyses” dated May 21, 2002, as a means to examine and investigate data from our ambient air monitoring networks, more O_3 and $PM_{2.5}$ monitoring will be needed in Region 4. The number and placement of these additional monitors will depend on how well EPA wants to be able to define these spatial data. This additional monitoring will need support from revised regulations and guideline documents in order to emphasize rural monitoring as a priority for EPA in its pursuit of spatial analyses.

Because Region 4's Network Assessment did not find any redundant O_3 monitoring to terminate, and also found that Region 4 needs additional monitoring for conducting accurate spatial analyses, EPA Region 4 investigated other means to achieve the goals of the National Monitoring Strategy in regards to liberating resources for new EPA initiatives. It was found through this investigation that the ozone seasons, as based on the current guideline document, may be overly conservative for purposes of achieving the goals of the National Monitoring Strategy.

An evaluation of the current ozone seasons for Region 4 states was performed to determine if any of the data reported during the current ozone season boundary months are needed to ensure accurate regulatory decisions regarding 8-hour ozone NAAQS attainment status, 1-hour ozone NAAQS attainment status, or accurate reporting of the AQI as required by 40 CFR Part 58.50. With the exception of Florida, Region 4 states recorded a combined total of only 27 March-April-October exceedences (values ≥ 0.085 ppm) during the 1996-2001 review period. If Region 4 states had not had their ozone monitoring networks operating during March of these years, it was found that the missed March exceedences would have had no impact on the calculation of resultant design values. The exclusion of April and October exceedences resulted in downward revision of five design values by 0.001-0.002 ppm. In no case did the revision of a design value due to the exclusion of a March-April-October exceedances alter the 8-hour ozone attainment status of an area. With the exception of Florida, all Region 4 states recorded only 1-hour ozone hits during May through September. A preliminary determination of AQI values for Region 4 shows that either ozone or $PM_{2.5}$ may be the controlling pollutant for any given day during the current ozone season boundary months of March, April and October. A final determination was not done due to discrepancies that exist in computations for the AQS Air Quality Summary Report (AMP410S).

An alternative to full network operation for the entire length of the ozone monitoring season, defined by the current guidance, is a hybrid ozone season that includes a core season of full network operation and a year-round operation season of a small subset of carefully-selected monitors. Thus, both regulatory and AQI objectives could be achieved by operating a subset of the full state ozone networks during March, April and October. For most states, all the objectives of year-round ozone monitoring can be met by operating two ozone monitors per state or 10% of a state's full ozone network, whichever is greater. The exact number of monitors should be determined on a state-by-state basis.

A hybrid ozone monitoring season with a May-September core comes closest to achieving the streamlining goals presented in EPA's draft National Ambient Air Monitoring Strategy document (September 1, 2002). EPA's current guidance on evaluating ozone seasons should be revised to facilitate the identification of ozone monitoring seasons that will achieve all primary ozone monitoring goals in a more cost-effective manner.

The greatest impediment encountered by EPA Region 4 in conducting this Regional Network Assessment was in obtaining useful raw and summary data from the new AQS. More emphasis by EPA needs to be directed towards correcting errors in current AQS summary reports and providing more support to EPA Regional Offices in the form of tools and training required to obtain data from the new AQS. However, because EPA is currently working toward rewriting the ambient air monitoring regulations, and because AQS has just recently been implemented there exists an opportunity to craft summary reports, and access to the raw data, that will assist the EPA Regional Offices in implementing EPA's new monitoring regulations and future network assessments.   EPA should examine its National and Regional Assessments to determine which analyses were most useful in optimizing the air monitoring networks and design automated AQS reports which assist in these assessments..

Implementation of new and revised ambient air monitoring regulations should not be done independently of AQS development.   All required regulations, policy statements, and routine data access needs should have associated automated AQS reports that provide the data in a meaningful format to EPA Regional Office staff. Data analysis and SAS programming expertise that exist in EPA should not be wasted by being applied toward routine functions that AQS should be able to compute. Failure to effectively translate air monitoring regulations into automated AQS reports will impede the deployment and review of the new air monitoring networks, future network assessments, and data analyses, including spatial analyses.

EPA Region 4 would welcome the opportunity to work with OAQPS in revising the existing guidance for selecting and modifying the ozone season and in revising and developing new guidance for network siting to meet the needs of spatial analyses.

II. Background

The National Monitoring Strategy (NMS) is intended to re-shape the monitoring program in ways that can easily accommodate both national and local needs, improved information flow to the public, incorporation of new technologies and new pollutant measurements, and do this in a
fiscally responsible manner.

The National Monitoring Strategy Committee (NMSC) is a partnership committee among the EPA and state, local, and tribal representatives. There are 18 members: seven EPA management level staff; seven representatives from State and local agencies, including the State and Territorial Air Pollution Program Administrators/ Association of Local Air Pollution Control Officials (STAPPA/ALAPCO); three Tribal representatives; and one facilitator.

The NMS is composed of six key components:

- The NCore Proposal (national core monitoring network)
- (National & Regional) Technical (Monitoring) Assessments
- Regulatory Review (40 CFR Parts 50 ,53, 58)
- Revised National Quality Assurance Program
- Proposals to enhance technical methods (use of continuous instruments)
- Communications and Outreach

The National Monitoring Assessment (NMA) provided a starting point for the EPA Regional Offices to begin their own air monitoring network assessments as requested in the June 12, 2002, memorandum from J. David Mobley. The NMA recommended national reductions of 5-25% for the ozone and fine particulate matter ($PM_{2.5}$) networks and 50+% reductions for the carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), particulate matter (PM_{10}) networks.

The NMA used spatial data analysis techniques in its evaluation of the national monitoring networks. The results of this analysis did suggest the southeastern United States should focus on reduction of clustered monitors in several larger urban areas.

EPA Region 4's network assessment addressed four major areas - a historical review of previous network modifications, a current assessment of network reduction possibilities, other findings which may provide our agencies with additional means to refocus monitoring resources, and an ozone season analysis that may provide monitoring resource savings.

III. Historical Examination of Network Revisions

EPA Region 4 has historically conducted network reviews as required in the Code of Federal Regulations (CFR) on all twenty-four (24) of its state and local agencies on a 3 year cycle. These reviews consisted of a systems audit and a network design review. The networks in EPA Region 4 meet the current requirements of 40 CFR Part 58 in regard to the National Air Monitoring Stations (NAMS) and State and Local Air Monitoring Stations (SLAMS). EPA Region 4 also has one Photochemical Assessment Monitoring Station (PAMS) area (Atlanta, Georgia). In addition to these regional reviews our State and Local Agencies are also required to conduct their own annual review of the existing monitoring networks to assure continued compliance with regulatory requirements.

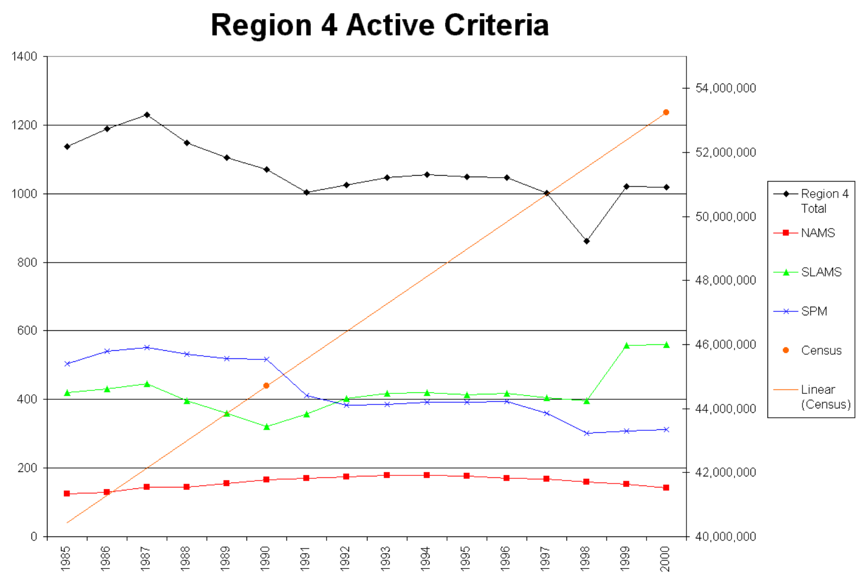


Figure 3.1

EPA Region 4 began its assessment by constructing a history of the monitoring networks for each state in the Region. This historical data was retrieved from the Air Quality System (AQS) for the base years of 1985 - 2000. The monitor types included NAMS, SLAMS, and special purpose monitors (SPM). The charts presented in this discussion are regional summaries of this information. These regional summaries provide

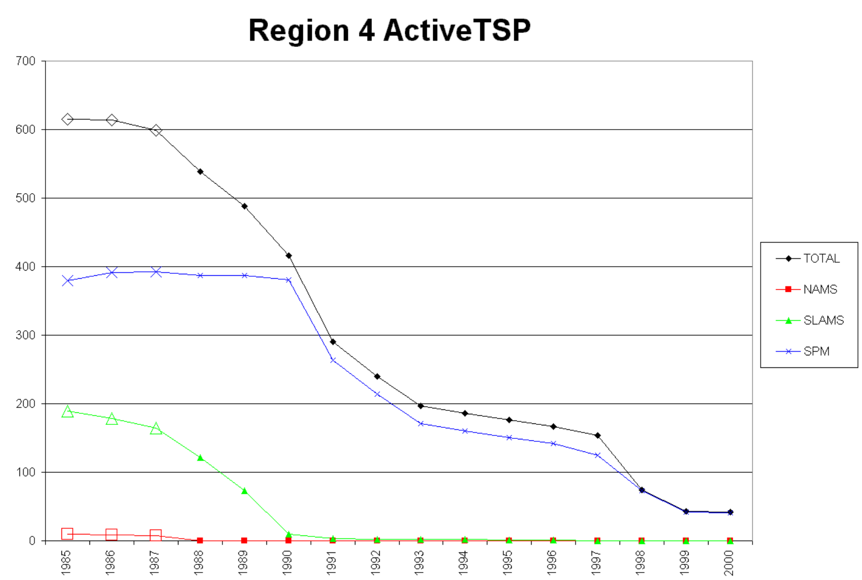


Figure 3.2

insight into the regulatory and guidance changes that have impacted the networks. Appendix A of the assessment provides a complete listing of the graphs/charts used in this historical review.

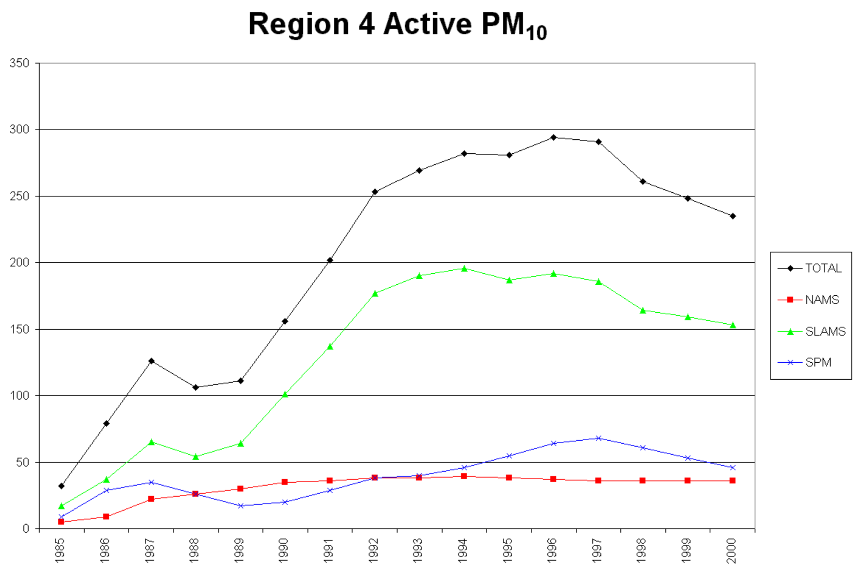


Figure 3.3

As required by 40 CFR, Part 58, the states in EPA Region 4 conduct annual network reviews to assure that the monitors in the network still meet the design and siting criteria. The annual reviews nominally provide an opportunity to refocus monitoring resources from low value monitoring to higher priority. In practice, few changes in the networks actually result from the annual reviews. Instead the focus is more on siting issues and ensuring that Part 58 requirements are being met.

The largest change in the monitoring networks has resulted from regulatory and guidance changes which have occurred through the years. For example, the change from total suspended particulate (TSP) to particulate matter (PM_{10}) beginning in 1987. Another significant decrease in the network occurred during 1997 with two events; first, the April 22 memorandum from William F. Hunt, Jr., concerning Ambient Monitoring Re-engineering [this memorandum provided guidance which allowed for the shutdown of SLAMS at or below 60% the level of the National Ambient Air Quality Standard (NAAQS) for CO, NO_2, SO_2, PM_{10}]; second, the change in the lead (Pb) rule which allowed for the termination of the remaining NAMS mobile

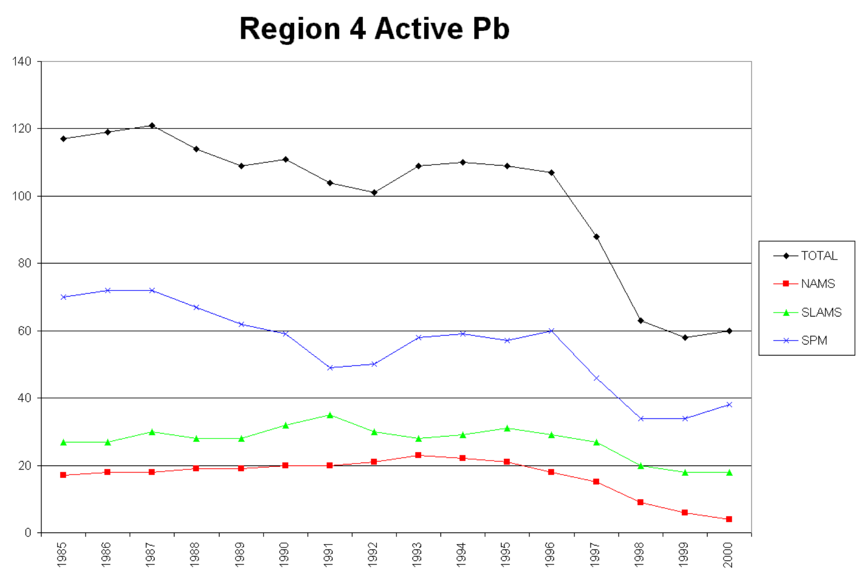


Figure 3.4

source oriented network.

This historical review also revealed several anomalies which required further investigation. One of these was that a large number of TSP - Pb monitors remained active in the State of South Carolina. Upon investigation, we found that the reason was that South Carolina has a state TSP standard. The State conducts metals analysis on the filters from its TSP network. As a result, the State has retained many of its TSP Pb monitors. Most of the TSP Pb monitors remaining in the Region are found in South Carolina. We also found the State of Alabama had approximately 31 non-existent SO_2 monitors These monitors had been entered into AQS inadvertently because they were listed as terminated instead of being deleted. Alabama has since corrected the database.

For the ozone (O_3) network, the historical data show a continued increase in the overall number of monitors operated throughout EPA-Region 4. Several factors account for this growth, including the change in population over this time frame, urban sprawl, and along with the change in the ozone standard itself from 1-hour to 8-hour. EPA Region 4 continues to have a serious non-attainment area for (Atlanta, Georgia) and one marginal area (Birmingham, Alabama) under the 1-hour ozone standard. Analysis presented and discussed elsewhere in this document will provide further justification for the current ozone network.

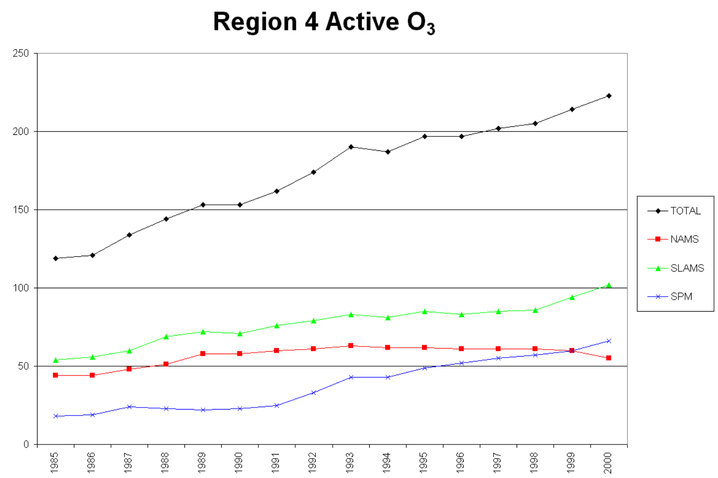


Figure 3.5

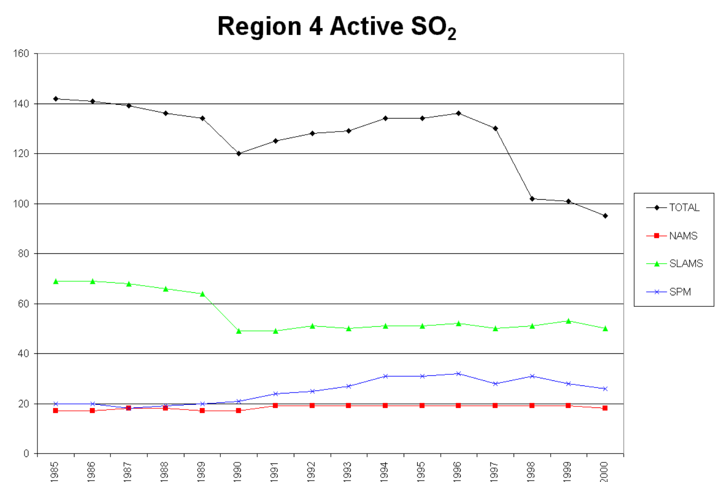


Figure 3.6

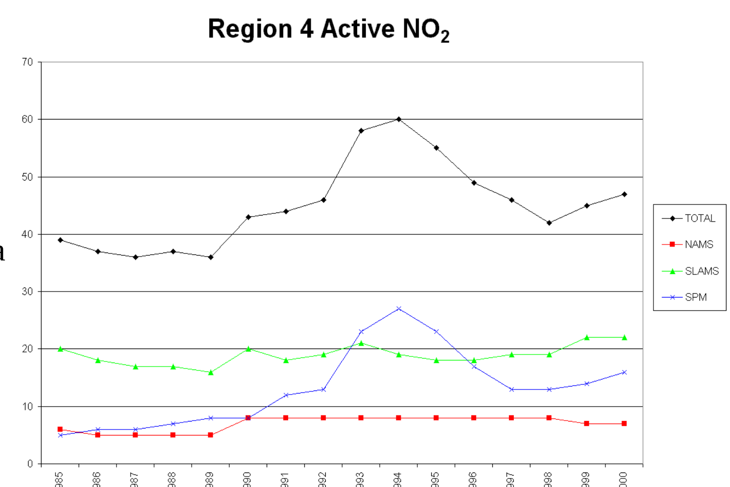


Figure 3.7

The $PM_{2.5}$ network, began deployment in 1998 and has just completed its 3rd year of data collection. These data indicate EPA Region 4 will have significant areas not meeting the annual $PM_{2.5}$ NAAQS.

The historical review shows that significant changes in monitoring networks, and particularly reductions in monitoring, only occur in response to regulatory changes, or major EPA policy changes.

IV. Assessment of Current Region 4 Network

EPA Region 4 undertook an in depth review of the monitoring networks in the southeast at the request of the EPA OAQPS. Utilizing existing CFR requirements (NAMS can not be terminated) and the EPA monitoring re-engineering guidance currently in place (monitoring which does not exceed 60% of the NAAQS), EPA Region 4 examined where redundant ambient air monitoring may provide data of minimal value. The Monitoring and Technical Support Section utilized multiple software packages including GIS to examine the data from AQS. These findings were forwarded to state and local agencies for their review. The criteria of using the monitoring re-engineering guidance and CFR requirements was used for all criteria parameters with the exception of $PM_{2.5}$ and O_3. For $PM_{2.5}$ and O_3, EPA Region 4 has utilized suggestions from the National Monitoring Assessment for the network evaluations, namely spatial analyses through GIS. The $PM_{2.5}$ and O_3 networks were also examined with spatial analyses because no monitoring reductions could be found using the criteria which were used for CO, Pb, NO_2, PM_{10}, and SO_2. None of the O_3 monitors in Region 4 were found to be below 60% of the NAAQS and only one $PM_{2.5}$ monitor was found to be below this threshold, at 59% of the NAAQS. In addition, EPA is in the process of designating nonattainment areas for both the $PM_{2.5}$ and 8-Hr O_3 standards. As a result of this, there has been additional analysis applied toward $PM_{2.5}$ and O_3 monitoring reductions to ensure that the designation process for these parameters in not adversely impacted.

The National Monitoring Strategy has the goal of reducing the CO, Pb, NO_2, PM_{10}, and SO_2 ambient air monitoring networks nationally by 50%. Utilizing these existing criteria mentioned above, EPA Region 4 reviewed the monitoring networks and made recommendations to the state and local air monitoring agencies that these monitors be reviewed as candidates for elimination. Region 4 state and local agencies were requested to review the data and to the extent possible, concur in terminating monitoring that they deemed to be low value or redundant.

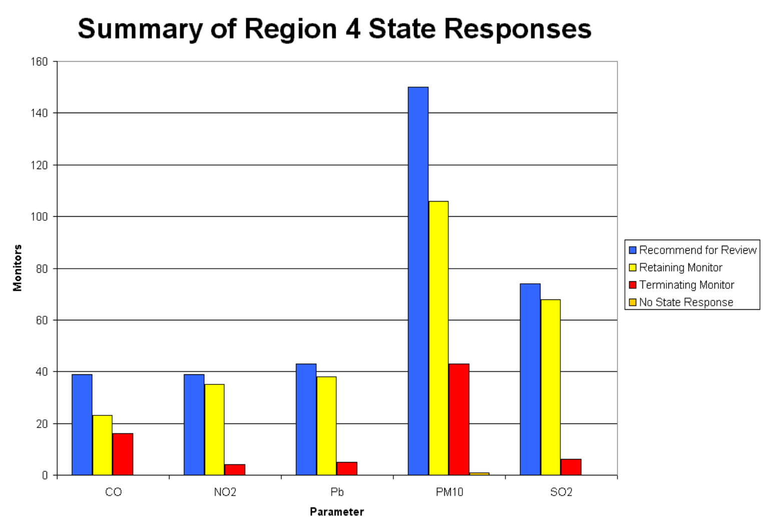


Figure 4.1

EPA Region 4 recommended approximately 345 monitors to review for possible termination to the state and local agencies. These 345 monitors represent over 67% of the total ambient air monitoring network for CO, Pb, NO_2, PM_{10}, and SO_2 in Region 4. This first approximation of a 67% reduction in the CO, Pb, NO_2, PM_{10}, and SO_2 networks includes a higher number of monitors than can be actually terminated. This is due to the coarse cut point which was chosen, i.e., monitoring that was not NAMS and which were documenting values below 60% of NAAQS. This cut point captures such monitoring as PAMS NO_2, high sensitivity CO, etc., which either may have regulatory requirements or that may provide useful research information. By involving the state and local agencies early in this process, Region 4 was able to use this coarse cut point as a starting point in the Region 4 Network Assessment. The Region 4 states' input was heavily relied on as a safe guard for maintaining monitoring that is deemed necessary and important to all agencies involved in the collection and use of this ambient air monitoring data.

Projected Reductions from Assessment

	O_3	$PM_{2.5}$	CO	NO_2	Pb	PM_{10}	SO_2
CY-00 Network	222	242	75	47	60	235	95
Recommend for Review	0	0	39	39	43	149	74
Retain / Terminate	222 / 0	242 / 0	23 / 16	35 / 4	38 / 5	106 / 43	68 / 6
Reduced (from Total)	N/A	N/A	21%	9%	8%	18%	6%

Table 4.1

After reviewing the list of monitors provided by Region 4 which documented those monitors that were recording concentrations below 60% of the NAAQS, state and local agencies have shutdown or are in the process of shutting down 74 monitors in the CO, Pb, NO_2, PM_{10}, and SO_2 networks. This represents approximately 21% of what EPA Region 4 requested for review as monitoring that may need to be terminated. It also represents a reduction of 14.5% in the CO, Pb, NO_2, PM_{10}, and SO_2 networks, a monitoring network that has already demonstrated substantial reductions in the past.

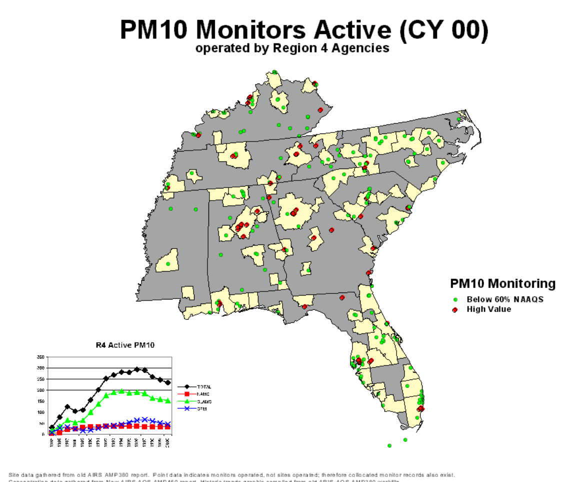


Figure 4.2

IV. (A) Network Assessments for CO, Pb, NO_2, PM_{10}, and SO_2

PM_{10}:

From the table above, Table 4.1, it can

be seen that the highest number of monitor terminations occurred within the PM_{10} parameter. EPA Region 4 especially encouraged state and local agencies to look for reductions in this parameter due to PM_{10} historically not being a major health concern for many areas of Region 4. Also from Figure 4.2 we can see that a large portion of the PM_{10} monitoring network is not NAMS monitors and are below 60% of the NAAQS. While Region 4 did achieve a large monitoring reduction in this parameter (about 43 monitors), state and local agencies still kept in operation about 82% of their PM_{10} monitoring network. EPA Region 4 is anticipating further PM_{10} monitoring reduction after the revised 40CFR Part58 monitoring regulations are published.

Pb:

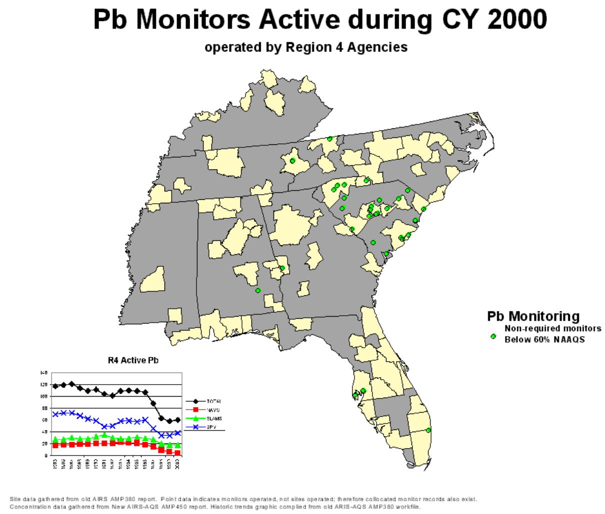


Figure 4.3

A very minimal ambient air monitoring network is currently operated in Region 4 for Pb and there were very few opportunities to prune this monitoring network any further. Only 5 Pb monitors were found throughout the Region that should be discontinued. South Carolina operates virtually all the Region's Pb monitoring, with 44 of the 60 monitors recommended by EPA Region 4 for review. Based on Figure 4.3, SC appears to be the only candidate in the southeast for terminating large amounts of redundant ambient air Pb monitoring. However, based on further inspection and consultation with SC-DEHC, it has been found that SC still has a state TSP standard and as such operates a state-wide TSP monitoring network to support those state regulations. While TSP is no longer a regulated parameter by the EPA, SC-DEHC also utilizes AQS as their primary database, as originally requested by EPA, and therefore all of these state TSP data are entered into AQS. In an effort to make the most use of the TSP data, SC-DEHC also conducts metals analysis on the TSP filters in support of their toxics monitoring efforts. As a result of this metals analysis, Pb is one of the many metal parameters that are entered into AQS. When the Pb parameters from the SC TSP network are removed from the Region 4 Network Assessment, we find that Region 4 has a total of 20 monitors that are not NAMS and are operating below 60% of the NAAQS. Therefore, this reduction of the five Pb monitors in reality resulted in a net decrease of 25% of the 'criteria' Pb monitoring in Region 4.

CO:

Region 4 recommended 39 CO monitors for review to the state and local agencies as possible candidates for termination. Several CO monitors that were not NAMS and recording concentrations below 60% of the NAAQS operate in Region 4. Most of these monitors are found in only three states, namely FL, KY, and NC. Of the 39 CO monitors active in CY 2000 that

Region 4 proposed for possible termination, 41% of these will cease operation or have already been terminated by Region 4 state and local agencies. Many of the CO monitors that remain are either recording concentration above 60% of the NAAQS, or are NAMS, or are high sensitivity instruments operated in support of ozone modeling efforts. After the PM_{10} reductions cited earlier, these reductions in CO monitoring are the second largest number of monitors terminated as a result of this assessment. Any major additional reductions in this monitoring network are no longer likely with the existing 40CFR part 58 regulations.

NO_2:

For CY 2000 there were 47 NO_2 monitors operated in Region 4. EPA Region 4 requested that 39 of these monitors be reviewed by our state and local agencies due to these monitors not being NAMS and recording concentrations below 60% of the NAAQS. Only four of these 39 monitors requested by Region 4 for review were terminated. It is important to note that these monitoring are generally operated to support other purposes; these monitoring are not sited for the sole purpose of demonstrating attainment for the NO_2 NAAQS. Only one of these 39 monitors was said to be in operation for population exposure for the NO_2 NAAQS and only one was said to be in operation for trends purposes. The vast majority of these sites are operated in support of ozone precursor studies and in support of New Source Review (NSR) programs. One agency stated that they operate an NO_2 monitor to assist in O_3 and PM forecasting, an endeavor that the EPA is currently encouraging agencies to perform. In this particular forecasting case, this NO_2 monitor is used as a surrogate for the inversion altitude.

Due to the complexity of operating NO_2 monitors, Region 4 state and local agencies do not operate these instruments unless they see utility in doing so. Of the 39 NO_2 monitors recommended by the regional office for review, only one of these monitors was operated at a site where NO_2 was the only parameter being measured. This monitor was also one of the four NO_2 monitors that were terminated as a result of this review. Figure 4.4 summarizes the monitors that will continue to be operated by Region 4 state and local agencies. The legend in this figure represents the number of parameters operated at the shelter. As can be seen from this figure, of the remaining NO_2 monitors that will be kept in operation, only two are being operated at sites where only one other parameter is being measured. All of the other NO_2 monitors that are not NAMS (33 monitors) are operated at sites where three or more parameters are being measured.

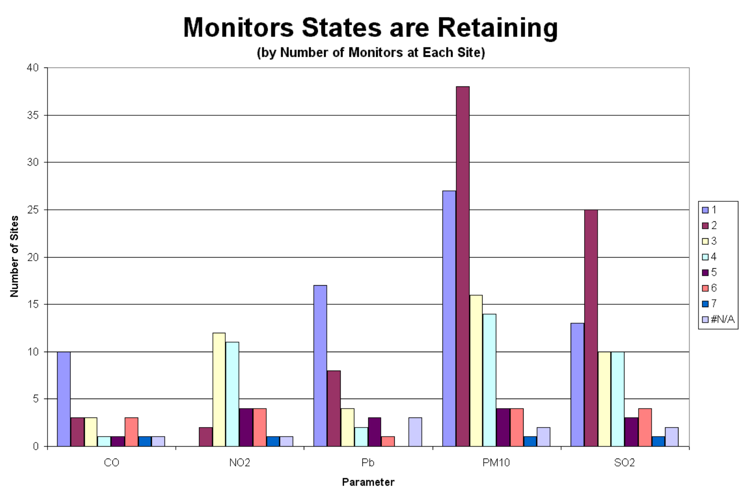


Figure 4.4

SO_2:

The initial analysis from EPA Region 4's Network Assessment showed Region 4 operating a network of 95 SO_2 monitors during CY 2000. Of this total SO_2 network, 74 ambient SO_2 monitors were recommended for review by EPA Region 4 due to these monitors not being NAMS and recording concentrations below 60% of the NAAQS. Very few monitor reductions were achieved in this network, with a total of only six SO_2 monitors being terminated. The majority of SO_2 monitoring in Region 4 are sited in support of New Source Review (NSR) or to monitor ambient air near facilities that have both historic and episodic problems with SO_2 emissions.

IV. (B) Multi-Parameter Analysis of Monitor Terminations for CO, Pb, NO_2, PM_{10}, SO_2

EPA Region 4 encouraged its state and local agencies in this Regional Network Assessment to continue their ongoing work of optimizing their ambient air monitoring networks by siting multi-parameter monitoring stations where possible and prudent. Through their required annual network evaluations and due to increasing resource demands, many Region 4 state and local agencies have been pursuing this as a network design option for several years. This Network Assessment has shown a similar trend in the reduction of monitors. Those monitors which are sited as the only monitoring being conducted at a given shelter are much more likely to be terminated by state and local agencies upon their annual network evaluation.

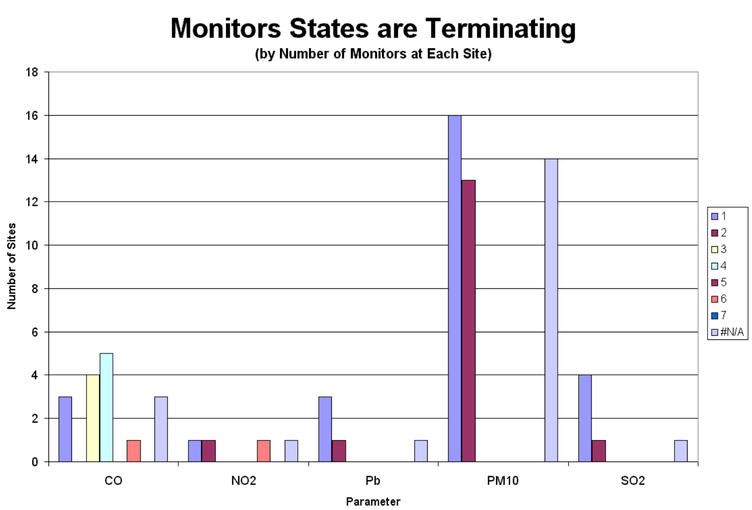


Figure 4.5

Figure 4.5 summarizes the monitoring terminations that occurred as a result of the assessment. The legend in this figure represents the number of parameters operated at the shelter where the terminated monitor resides. As can be seen from the figure, those monitors which have been terminated or will be terminated as a result of this network assessment are largely those monitors which were sited at locations where there was only one or two criteria parameters are being measured. The exception here is for the CO parameter. Region 4 state and local agencies terminated low value CO monitoring even at locations where multiple parameters were being operated at the shelter. Referring back to Figure 4.4, they are only 10 CO monitors, excluding NAMS, operating in Region 4 where CO is the only monitor operated at the shelter. Monitoring terminations have reduced the Pb and PM_{10} networks as a whole, but a large number of sites are still operated where only one or two monitors are operated. Pb and PM_{10} monitoring are often sited around points of concern and this is shown through these two figures. Few SO_2 monitors were terminated. Those terminated SO_2 monitors were at stations where only one or two monitors were present. However, inspection of Figure 4.4 shows that there remains an abundance of SO_2 monitors where SO_2 is either the only parameter being monitored, or it is sited with only one other parameter. While this alone does not indicate that the SO_2 monitoring network should be reduced any further, it does suggest that further examination may be required.

IV. (C) Network Assessments for Ozone & $PM_{2.5}$

The National Air Monitoring Strategy has the goal of reducing the O_3 and $PM_{2.5}$ ambient air monitoring networks nationally by 5% to 25%. EPA Region 4 attempted to utilizing existing regulations and re-engineering guidance to review the O_3 and $PM_{2.5}$ monitoring networks. However, it was found that the O_3 and $PM_{2.5}$ concentrations in Region 4 were too high to meet the criteria for discontinuing monitoring that were used for the CO, Pb, NO_2, PM_{10}, and SO_2 networks. Therefore, no O_3 or $PM_{2.5}$ monitors were initially recommended by EPA Region 4 for review to our state and local agencies for possible terminations. Other analysis, including spatial analysis techniques, were used by EPA Region 4 to investigate these ambient air monitoring networks for possible resource savings through terminating redundant monitoring. Region 4 has utilized spatial analyses during the past few years in its review of the states' ambient air monitoring networks. It was hoped by using these spatial analysis tools and techniques in new ways that potential monitoring redundancies could be identified and terminated. Some of these techniques developed by Region 4 for network reviews were combined with lessons learned from the National Assessment. It was hoped that these spatial analyses would allow Region 4 to achieve the National Air Monitoring Strategy's goal of a 5% to 25% reduction while not losing the spatial information provided by the current network. While exceptional event data was not included in the National Assessment, it was decided to include exceptional event data in the spatial analysis that was conducted by EPA Region 4. This exceptional event data was included because of its importance to programs such as EPA's Air Quality Index (AQI), EPA's voluntary AirNow ozone mapping program, and EPA's increasing awareness for the need for more spatial analyses of the current data being collected.

The interpolation method used for performing the spatial analysis on the Region 4 O_3 and $PM_{2.5}$ ambient air monitoring networks was inverse distance weighting (IDW). This method was chosen because of software availability, computational ease for the computers that are available to Region 4 staff, and to no small part because the EPA's AirNow program utilizes IDW to produce their O_3 maps for public distribution. The EPA is hopeful that maps for $PM_{2.5}$ will soon be produced using this method of interpolation as well. EPA Region 4 did not want O_3 and $PM_{2.5}$ monitoring terminations or network modifications to have adverse impacts on the quality and accuracy of the very successful EPA AirNow project. It was hoped that by utilizing IDW as the interpolation method for conducting the regional spatial analysis, that potential adverse impacts to the AirNow maps could be detected before the EPA Region 4 recommend and implemented monitoring network changes in the field.

In addition to concerns about potential adverse impacts to the AirNow program, Region 4

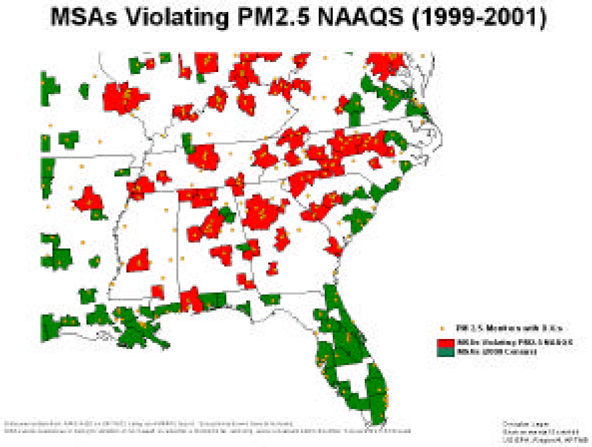


Figure 4.6

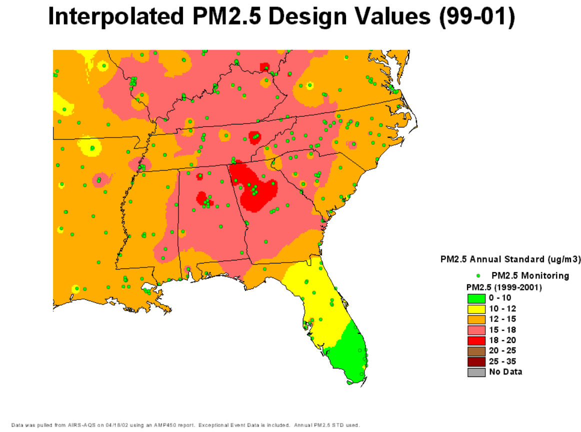


Figure 4.7

was also particularly concerned with insuring that monitoring terminations or network modifications to the O_3 and $PM_{2.5}$ networks did not hinder the SIP process in determining new non-attainment boundaries for areas violating either the 8-Hr O_3 or $PM_{2.5}$ NAAQS.

$PM_{2.5}$:

Region 4 has many MSAs that would potentially violate the $PM_{2.5}$ annual NAAQS, as can be seen from Figure 4.6. This is important because MSAs are being used as the starting point for negotiating the nonattainment boundaries of areas violating the 8-Hr O_3 or $PM_{2.5}$ NAAQS. This figure however doesn't capture the full extent of the problem in Region 4 because only monitored MSAs are shown. Close examination of the Figure 4.6 shows that many monitors reside outside of MSAs. Many of these monitors sited outside of MSAs are also potentially violating the $PM_{2.5}$ annual NAAQS. To get a better understanding of the extent of the problem being faced in Region 4 in regards to $PM_{2.5}$, it is more useful to present the $PM_{2.5}$ data spatially through interpolation as opposed to representing the violating areas by either monitored MSA or county boundaries. This interpolated spatial representation of the $PM_{2.5}$ violations are shown here in Figure 4.7. From this figure it can be seen that a very large portion of Region 4 is exposed to violations of the $PM_{2.5}$ annual NAAQS based on 1999-2001 data.

Because of the broad scale problem of $PM_{2.5}$ in Region 4, the fact that this monitoring network has just recently been deployed, and because Region 4 has yet to formally determine the number and extent of nonattainment areas for $PM_{2.5}$, Region 4 will not be recommending any $PM_{2.5}$ monitors be terminated as a result of this review. Region 4 hopes that future changes to monitoring regulations will provide a means to reduce $PM_{2.5}$ monitoring in those areas of the region where the populations are high and the $PM_{2.5}$ concentrations are found to be low. The most important resource savings that could be found in the $PM_{2.5}$ network would be to have large portions of the Federal Reference Monitoring (FRM) $PM_{2.5}$ monitors replaced with continuous instruments. However, FRM $PM_{2.5}$ monitors can not be replaced with continuous $PM_{2.5}$ instruments until the EPA approves the use of these continuous $PM_{2.5}$ monitors for regulatory purposes.

Ozone:

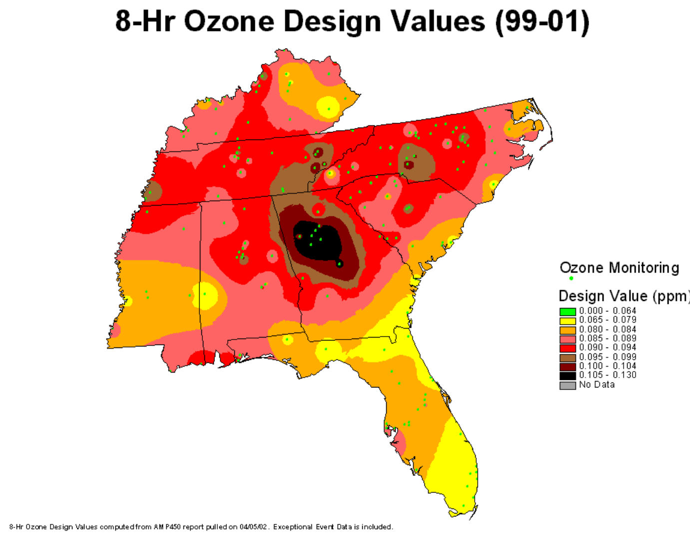


Figure 4.8

Many of the concerns with making substantial modifications to the ozone monitoring network in the southeast were similar to those faced by Region 4 in examining the $PM_{2.5}$ network for monitor relocations or terminations. The number and extent of the 8-Hr O_3 nonattainment areas in Region 4 have yet to be determined. There are concerns that moving or terminating ozone monitors could have unforseen consequences in making these regulatory decisions. Like $PM_{2.5}$, the 8-Hr O_3 violations are pervasive in Region 4, as can be seen from the Figure 4.8. However, ozone formation is better understood than $PM_{2.5}$ and Region 4 hoped that some means to find resource savings could be found through an in-depth analysis of the ozone monitoring network in the southeast.

In order to address both the episodic nature of ozone formation and the need of EPA programs such as AQI and AirNow to report all bad air quality data to the public, it was decided to include exceptional event data in the spatial analyses that were conducted. The data collected from the ambient air monitoring networks is being more and more used for public notification as opposed to just regulatory decision making. As such, exceptional events are an important portion of the information that the public needs to make daily informed health based decisions. To also assist in ensuring that public notification needs were not compromised from potential monitoring reductions, it was decided not to 'average out' important episodic information by relying too heavily on design value computations as the basis for all of the analyses. An examination of variability was also attempted, but an in-depth review of this was hampered by the difficulty in obtaining data from the new AQS. Variability was of interest due to its potential to target monitoring for termination where other nearby monitors may be capable of providing

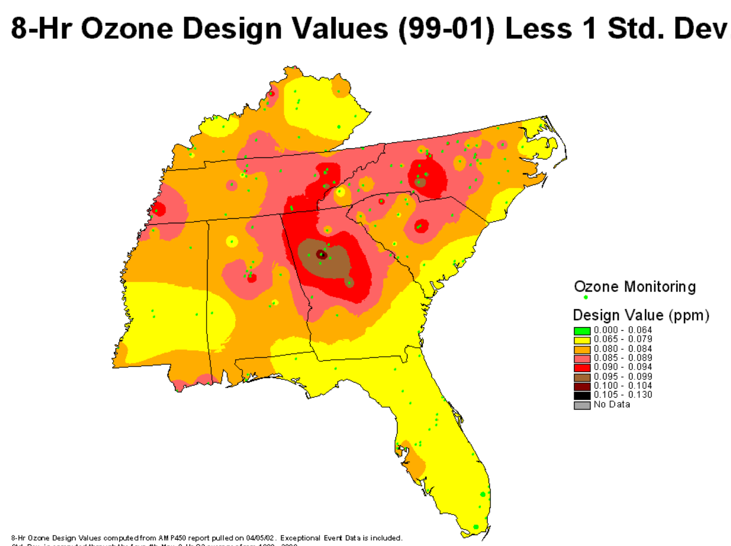


Figure 4.9

similar data. A standard deviation of the Region 4 design values was approximated by assuming the variability of the standard deviations was captured in the daily 4th maximum 8-Hr O_3 concentrations from only 4 years of data, namely 1998-2001. While certainly less than ideal, this assumption included the very harsh ozone season of 1998, with the accompanying exceptional event data from the Florida and Central American fires, and it included CY 2000's mild meteorological conditions as well. While most of the ozone monitors in Region 4 showed a lot of variability when employing this technique, a small fraction of the ozone monitors did reveal themselves as being candidates for further inspection. It was later found that these low variability monitors were either rural in nature or sited in areas with high population.

To examine those monitors which may be of critical importance to policy decisions regarding attainment for the new 8-Hr Ozone NAAQS, this variability was employed by removing one standard deviation from the 1999-2001 design values. Figure 4.9, illustrates the effect of subtracting this measure of variability from the 1999-2001 design value. This was done to see which areas would still be in violation of the NAAQS even with an improvement in air quality equivalent to one standard deviation. When the 1999-2001 design values were reduced in magnitude by a standard deviation, computed as mentioned above, it was found that there were still large areas within Region 4 that would still be in violation of the 8-Hr O_3 NAAQS. The fact that many areas in Region 4 can have their design value reduced by this amount and yet still not attain the 8-Hr Ozone NAAQS is a concern. Investigations into potential monitoring reduction is these areas were examined very cautiously.

8-Hr Ozone Design Values (99-01) plus 1 Std. Dev.

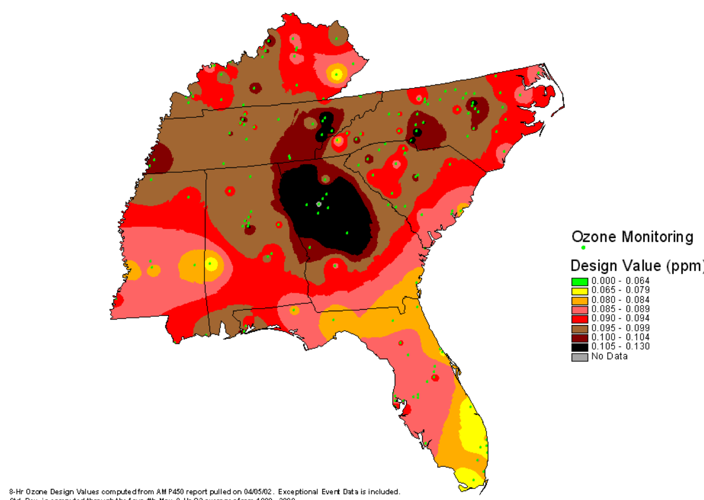


Figure 4.10

Next, to address the importance of public notification with regards to the 8-Hr Ozone NAAQS, this variability was employed by adding one standard deviation to the 1999-2001 design values in an effort to address the worst case air quality scenario. Figure 4.10, illustrates the effect of adding this measure of variability to the 1999-2001 design value. As can be seen from examination of this figure, some monitors even when adding as much as one standard deviation to their 1999-2001 design values, still have low concentrations. Many of these monitors were first thought to be candidates for termination due to many being sited in suburban to rural areas where policy issues are less of a concern. Further examination of these sites has shown, as will be discussed later, that many of these ozone monitors are some of Region 4's most important sites with respect to supporting the EPA's AirNow ozone mapping project. Because the majority of low concentration areas in this figure were later found to be important to conducting accurate spatial analyses and because the

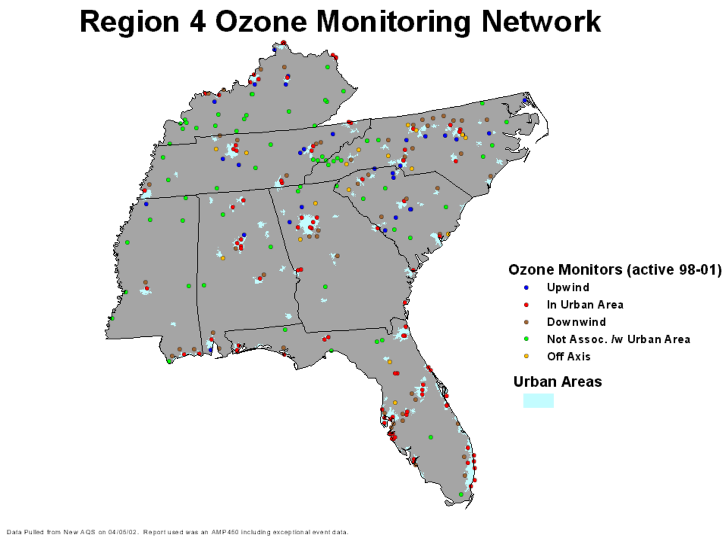


Figure 4.11

high concentration areas are needed for public notification, this particular analysis did not reveal any monitors which were good candidates for termination.

Another spatial analysis technique that was employed by the EPA Region 4 was to perform a sensitivity analysis of which groups of monitors produced the most and least error in the interpolated domain when removing them from the regional network. These 'groups' of monitors where classified by where the ozone monitors were sited with respect to urban areas. The ozone monitors where designated as either being upwind, downwind, off axis (secondary wind direction), in the urban area, or not associated with an urban area. While this was done qualitatively, windroses, computed for mean wind direction during the ozone season, were used to assist in making these determinations. Figure 4.11, shows the classified scheme described above. It should be noted that just because monitors are not sited in and around areas that are defined by the U.S. Census as being urban areas, this does not mean that these ozone monitors are not sited within a sizable community. Many states in Region 4 have towns which the state desires to have ozone data collected, but these towns are too small for the U.S. Census to define as being official urban areas. Varying permutations of removing these groups of monitors were performed and the resulting bias recorded. The 1998 8-Hr O_3 4th Max. was used in this sensitivity analysis as the reference to measure any resulting bias from potential monitoring reductions because this yearly statistic was seen as being the most likely to show where adverse impacts to the EPA AQI and AirNow ozone mapping project may occur if the wrong ozone monitors were removed from the networks.

One group of monitors that were removed from the interpolation to measure the resulting bias was the removal of all monitors that reside within the urban areas, Figure 4.12. Removing all ozone monitors from within the urban areas is of course ill-advised. In doing so, however, it would be expected to see that most resulting bias, if not all bias, would be negative. This is not the case. There are clearly areas in Region 4 where removal of the urban area monitors

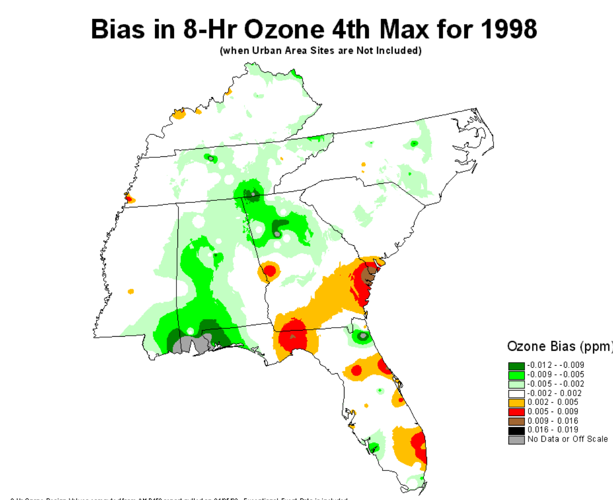


Figure 4.12

result in bias higher than +5ppb. Some of this positive bias can be explained by the use of the 8-Hr O_3 standard as opposed to the 1-Hr O_3 standard as the measure of bias. It is expected that air quality problems with the 8-Hr O_3 standard range further downwind than with the 1-Hr O_3 standard.

Those areas showing high bias and where limited monitoring is being conducted, again illustrated here in Figure 4.12, contain monitors that are critical to the regional monitoring network and may suggest, from a regional perspective, that additional monitoring should be considered. For example; if during an ozone conducive event for Region 4, either the monitor in Savannah, GA or Tallahassee, FL were to go offline due to reasons ranging from phone line problems to monitor failure, the resulting ozone maps for those respective areas produced by the EPA on AirNow could be biased high greater than +9ppb for an 8-Hr O_3 average.

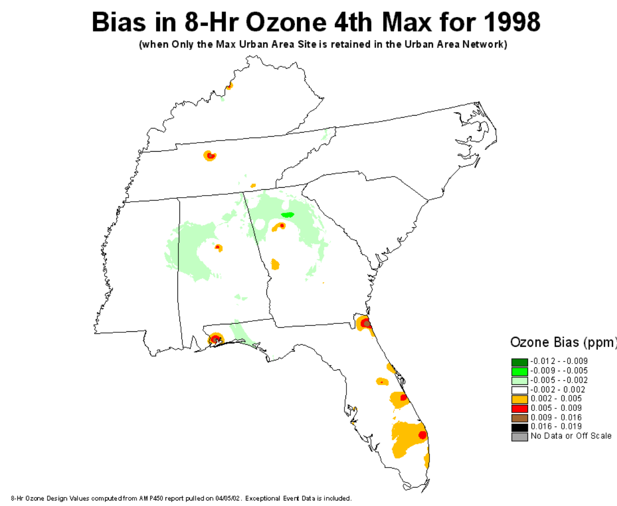


Figure 4.13

Figure 4.13 again shows removal of most urban area monitoring. In this scenario, all ozone monitoring residing in the urban areas is terminated with the exception of the site which recorded the highest daily 4th Max. 8-Hr O_3 concentration for 1998. In this figure we can see the bias is much less pronounced than in Figure 4.13. From a purely spatial analysis perspective of the daily 4th maximum 8-Hr O_3 concentration, it can be concluded from these two figures that while urban area monitoring is needed, there is the potential to find resource saving by discontinuing monitoring in those urban areas where clustered monitoring exists. Some other issues that may require that these clustered monitors remain (which can not be address through this particular spatial analysis) include; policy considerations, ozone forecasting programs, ozone action day programs, and research needs from universities. This particular spatial analysis did not in itself cause Region 4 to recommend any specific monitors to be terminated; but it did indicate, as stated in the National Monitoring Strategy, that some monitors in clustered urban areas may be candidates for further inspection for potential termination.

Another permutation on this sensitivity analysis was the removal of all monitors not associated with urban areas, as shown in Figure 4.14. This monitoring was assumed to be rural in nature, whether sited by states for background purposes or for monitoring being in small towns. From a purely regulatory perspective, many of these monitors may be of low value because of their rural nature and because in general they record lower ozone concentrations. However, of the subsets of monitoring examined in this sensitivity analysis, these rural monitors were found to be the most critical to both the EPA AirNow program and to performing accurate spatial analysis. Without these rural monitors, the high ozone concentration readings of the

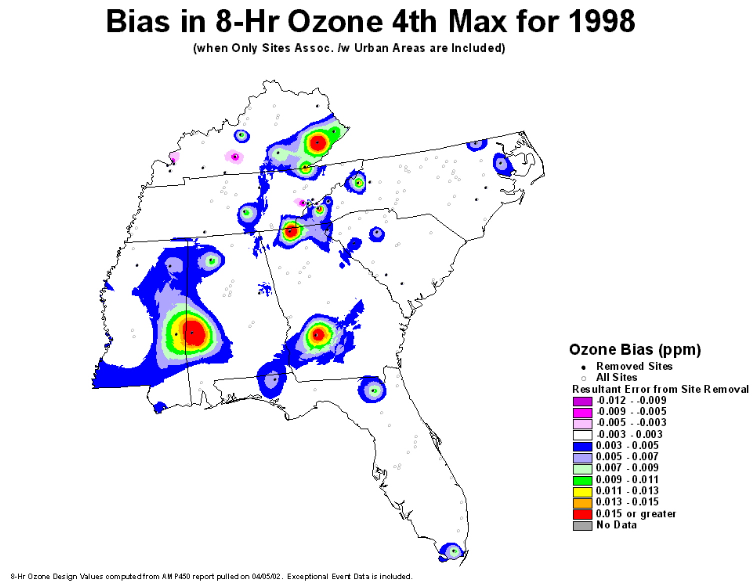


Figure 4.14

urban areas are inappropriately interpolated too far out into the countryside. The full extent and magnitude of the inappropriate interpolation caused by the removal of these rural monitors can not be completely quantified because the interpolation may already be broadcasting the urban area monitoring readings too far, even when all of the rural monitors are retained. However, the figure does clearly quantify that for those areas that currently have rural monitors, many of these monitoring locations have their annual 4th maximum 8-Hr O_3 concentration biased significantly high if the rural site is removed. One example of this in Figure 4.14 is shown for two ozone monitors (one in MS, the other in AL) sited near the town of Meridian, MS. For the monitor in Alabama, if interpolation alone is used to represent the ozone concentration in this area without both of these rural monitors present, the ozone concentration produced from the interpolation for the site in Alabama is greater than 15ppb above the actual measurement that is being made by the ozone monitor at that location.

Many of these ozone monitors, as shown in Figure 4.14, were found by Region 4's Network Assessment to be critical to performing accurate spatial analyses on the data. However, many of these same ozone monitors were found by the EPA National Network Assessment to be low value sites that contribute minimal bias when the sites were not present in the interpolation. This discrepancy is due in part to the National Network Assessment's method of removing one monitor at a time from the entire monitoring domain to measure the resulting interpolation bias, compared to Region 4's approach of removing groups or classes of monitors from the overall monitoring domain. To assist in the comparison of the spatial analysis results of Region 4's work to a similar National Assessment analysis, Figure 4.14 has been produced to use a similar color scheme and breakpoint selection as figure 7, page 28, from the July 5th Draft National Ambient Air Monitoring Strategy Summary Document. Using the National Assessment method, if only one monitor is chosen to be terminated from the entire network, the results present in figure 7 from the National Assessment method are probably accurate. Because National Assessment's method is based on one monitor's importance to the entire network design, the potential misuse of the results from figure 7 occurs when more than a single monitor is chosen to be terminated. Since it was the goal of the National Air Monitoring Strategy to reduce the O_3 monitoring network by 5% to 25% nationally, Region 4 decided to develop a method that would more accurately and readily measure the resultant interpolated bias based on more than one monitor being terminated at a time. The Region 4 Network Assessment accomplished this using the method described above, namely by examining the importance of classes of monitors to the network as a whole. This method developed by Region 4 is not without fault either and also has the potential for misuse as well. A combination of the Region 4 method and national method are probably needed in order to best determine resultant interpolated bias from the removal of monitors and to refine the regional monitoring networks.

Even despite the monitoring disincentives that currently exist (e.g., expansion of nonattainment areas into downwind areas which receive transported ozone but are not major contributors), Figure 4.14 shows how Region 4 States have been siting some ozone monitoring that address rural and background air quality, and thus assists in the support of spatial analysis. More monitoring of this type is probably needed for more accurate spatial analysis and to better define the extent of ozone plumes in Region 4. Operation of rural monitors is not only hampered by monitoring disincentives, but also by the increased cost associated with monitoring at locations that are sited in remote areas. While more rural monitoring is probably needed, the chances of Region 4 getting more ozone monitors sited in these locations, where operational cost is higher and population density is low, is not likely without modified regulatory requirements and updated guideline documents from the EPA stressing the importance of these priorities.

Region 4 determined from these sensitivity analyses that the potential ozone monitoring candidates for termination were from those urban areas where monitoring was clustered. Region 4 then examined these networks further to see if other criteria were forcing the siting of these monitors to be clustered. It was quickly determined that attempting to manage the intricacies of urban area networks from a regional perspective was not prudent. EPA Region 4 decided not to use the same statistic as used in the sensitivity analysis, namely an annual 4^{th} maximum 8-Hr O_3 concentration. Instead, in an effort to ensure that the public notification of poor air quality was not impacted by monitoring modifications, the statistic chosen was the number of bad air quality days per year based on the local metropolitan area. Because no standard AQS report can accomplish this statistic, Region 4 requested the input of the state and local agencies to examine this subset of their ozone monitoring networks to determine which monitors are most critical for capturing the total number of bad air quality days for ozone. State and local agencies were also requested to inform EPA Region 4 which monitors were needed for either university research, ozone action day and ozone forecasting programs, the EPA's AirNow, or for other policy issues. Special emphasis was paid to making sure that the total number of bad air quality days recorded by the metropolitan area network would not be affected by terminating current ozone monitoring sites. This was done because of the increasing need to have this data for public notification of current and forecasted air quality and for photochemical model evaluations.

Region 4 requested this input from all agencies. However, two metropolitan areas in particular stand out as potential candidates for reducing the size of their ozone monitoring networks when viewed from a regional perspective. These urban areas are Birmingham, AL and Atlanta, GA.

The Jefferson County Department of Health supplied the requested information for Birmingham to EPA Region 4. This summary information, showing which ozone monitors recorded 8-Hr O_3 daily maximum concentrations greater than or equal to 85pbb and on which dates those readings occurred at each monitor, was used to examine which monitors contributed to bad air quality days. Examination of the data supplied by the Jefferson County Department of Health did not result in any ozone monitors that were clearly candidates for removal from the monitoring network. Conversations between the EPA Region 4 and the Jefferson County Department of Health did result in consensus that from a scientific perspective it would be best if some of the monitoring that resides within Jefferson County be sited outside their county to better capture the extent of the ozone problem in the area of Birmingham. However, Jefferson County Department of Health said that the state agency, Alabama Department of Environmental Management, has informed them that they do not have the resources to operate as many monitors around Jefferson County as the Jefferson County Department of Health would like to have operated in their area. The result of this is that the Jefferson County Department of Health operates several ozone monitors near their county line, adjacent to neighboring counties which lack ozone monitors.

The Georgia Environmental Protection Division also assisted the EPA Region 4 with examining their Atlanta ozone monitoring network for possible monitoring redundancies. Again, there were no monitors found that clearly should be removed from the Atlanta area network based on monitoring that is not found to be critical to determining the number of bad air quality days. In addition, correspondence between the Georgia Environmental Protection Division and the EPA Region 4, attached, states the current Atlanta ozone monitoring network has had extensive input from Georgia Tech. This university input on network design has been used to meet both research needs and to help assist the Georgia Environmental Protection Division in producing better ozone forecasts for the area.

Because of the broad scale problem of O_3 in Region 4, and because the Region 4 has yet to formally determine the number and extent of nonattainment areas for 8-Hr O_3, EPA Region 4 will not be recommending any O_3 monitors to be terminated as a result of this review. It is hoped that future changes to monitoring regulations will provide a means to reduce O_3 monitoring in those areas where urban area populations are high and where O_3 is found in low concentrations. The likelihood of finding any resource savings in the Region 4 O_3 network is minimal and it is probable that additional rural ozone monitoring should be sited to assist with improving the accuracy of data presented on the EPA AirNow and improving the accuracy of spatial analysis that will continue to become more important to the EPA.

IV. (D) Other Findings (O_3 and $PM_{2.5}$)

EPA Region 4 relied heavily on GIS to conduct its Regional Network Assessment, especially for O_3 and $PM_{2.5}$. While examining these ambient air monitoring networks with GIS, it was found that Region 4 has the highest

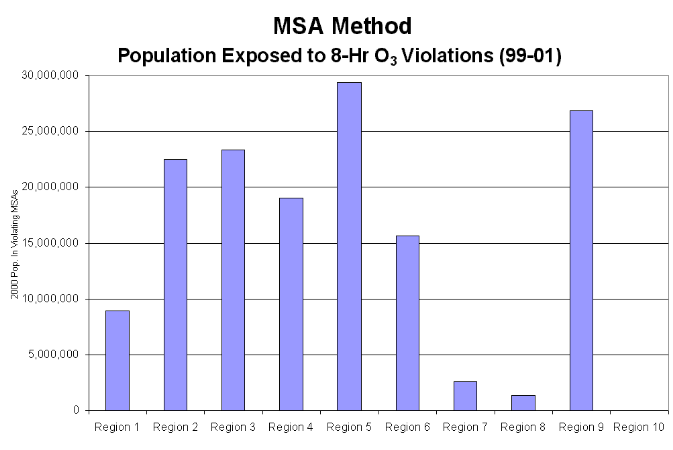


Figure 4.15

regional population in the U.S., as of the 2000 Census. It was also found through this Regional Network Assessment that Region 4 is affected by 8-Hr O_3 and annual $PM_{2.5}$ violations that extend across large domains of the region. It is reasonable to assume that if Region 4 has the nation's largest regional population and a very pervasive 8-Hr O_3 and annual $PM_{2.5}$ air quality problems, that Region 4 would have the most people in the nation being exposed to these pollutants. Inspection of the EPA Trends Report, however, does not support this assumption. This prompted the EPA Region 4 to examine this issue in detail by utilizing spatial analysis techniques that were developed through conducting the Region 4 Network Assessment.

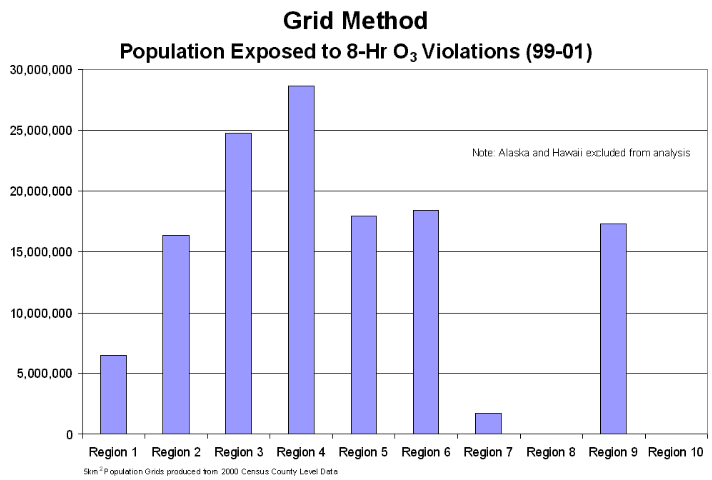


Figure 4.16

As a first step in making the comparisons between the spatial analyses performed for the Region 4 Network Assessment to the methods that are used by EPA in publications such as the Trends Report and the Factbook, Region 4 summarized O_3 and $PM_{2.5}$ data from the AQS for the 1999-2001 period utilizing the methods that are used in the EPA Trends Report and Factbook. These methods used in the EPA Trends Report and Factbook document populations that are living in MSAs and counties that also have a monitor that is showing violations of the NAAQS. Next, Region 4 interpolated these same O_3 and $PM_{2.5}$ data to produce gridded datasets. A grid cell size of 5km^2 was chosen. County level population data from the 2000 Census was then also converted into a 5km^2 gridded dataset. Using spatial analysis techniques, population grid cells that also had an interpolated violating design value were summarized by Region. This regional summary produced through spatial analyses was then

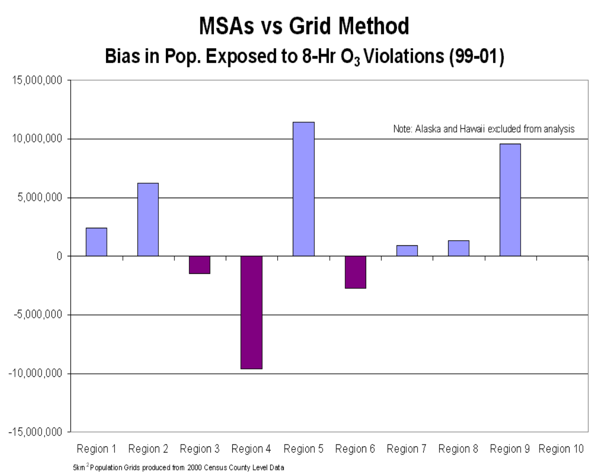


Figure 4.17

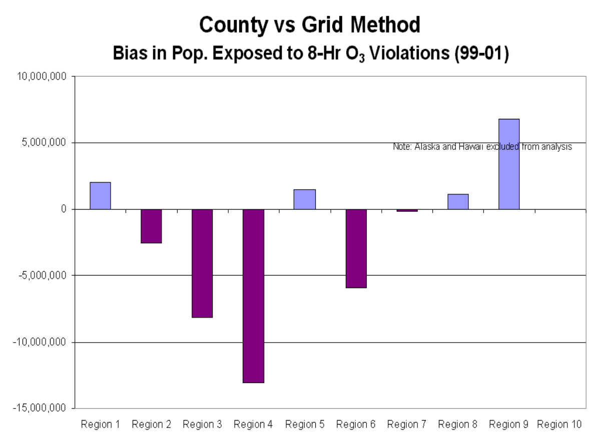


Figure 4.18

compared to population statistics derived from methods employed in the Trends Report and Factbook.

When summarizing the 8-Hr O_3 violations for 1999-2001 by the number of people living in MSAs where there exists a violating O_3 monitor, we can see from Figure 4.15 that Region 4 does not rank as high as many other Regions for the number of people living within MSAs with recorded violations. This MSA statistic used by EPA does not capture those populations that reside outside the boundaries of MSAs. Also and more importantly, this statistic will count the entire MSA population when only one monitor of an entire network of monitors records a violation of the NAAQS. When summarizing the exposed populations by utilizing spatial analysis techniques that were developed through this regional network assessment, it can be seen from Figure 4.16 that Region 4 has the largest number of people exposed to violations of the 8-Hr O_3 NAAQS based on 1999-2001 data. This spatial analysis technique for estimating exposed populations has the potential to be more accurate than methods that have been used previously. Figure 4.17 quantifies the bias between the described MSA method and the Grid method for expressing exposed populations to violations of the 8-Hr O_3 NAAQS. As can be seen from this figure, Region 4 is biased substantially low, approximately 10 million people, if the MSA technique is the method chosen for expressing population exposed to the 8-Hr O_3 violations for 1999-2001. Also of interest is that both Region 5 and Region 9 are biased high by approximately 10 million people each using this MSA method. While Region 4 is certain that these spatial analysis techniques for estimating exposed populations are better than the methods currently being employed, the accuracy of the Grid method to a given region is going to be dependent on the design and density of the ozone monitoring network.

Next, the method used to compute the EPA statistic for the number of people living in counties that also have a violating monitor was compared to the Grid method for expressing populations exposed to this NAAQS. Because in general counties are smaller than MSA boundaries it was first assumed that the county method for representing exposed populations would have better agreement with the Grid method. This was not found to be true. As can be seen from Figure 4.18, Region 4 is again biased substantially low, by more than 10 million people, if the county technique is the method chosen for expressing population exposed to the 8-Hr Ozone violations for 1999-2001.

An example of how this bias can manifest itself is shown here in Figure 4.19. In this figure of Southern California those grid cells which had an interpolated design value greater than the level of the 8-Hr O_3 standard are colored red. County and MSA boundaries are overlaid on this violation grid. As can be seen from this figure, both the counties of San Diego, CA and

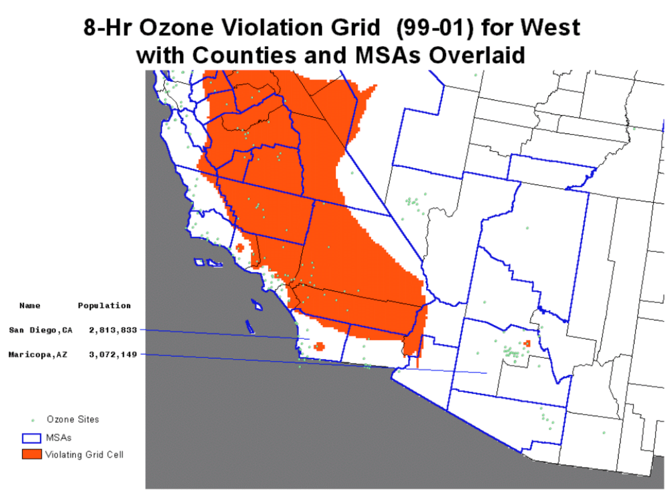


Figure 4.19

Maricopa, AZ have extensive ozone monitoring networks. These O_3 monitoring networks effectively document that most of these two counties are not exposed to violations of the O_3 NAAQS. Only one monitor in each of these counties are violating the 8-Hr O_3 standard. In addition, large areas of the Los Angles area are clearly not subject to violations of the 8-Hr O_3 standard. If either of the current EPA methods of expressing exposed populations (County method or MSA method) are used in these cases, the result will be artificially high. The Grid method, however, does do a more accurate job of documenting that only a portion of the county is exposed.

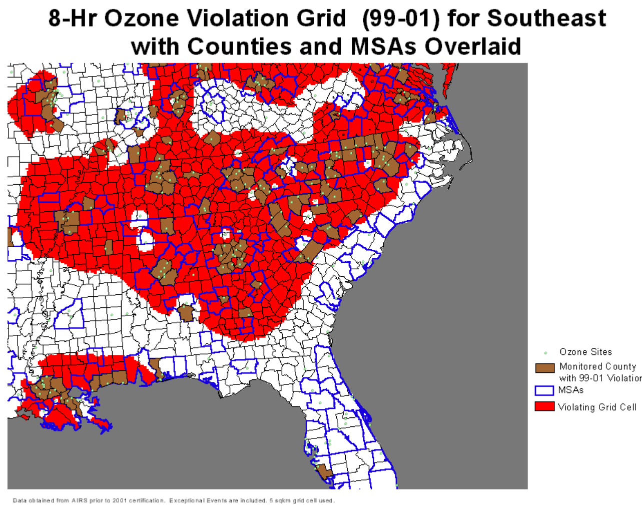


Figure 4.20

Attempting to completely capture the population that is exposed to 8-Hr O_3 violations in Region 4 using the county method currently used by EPA is problematic. As can be seen from Figure 4.20, if exposed populations are only defined by only those counties that contain a violating ozone monitor (represented as brown polygons in the figure), only very small portion of Region 4 is defined as areas where the population is breathing air that is in violation of the NAAQS. The violating grid cell (colored red in the figure) exist over a much larger domain.

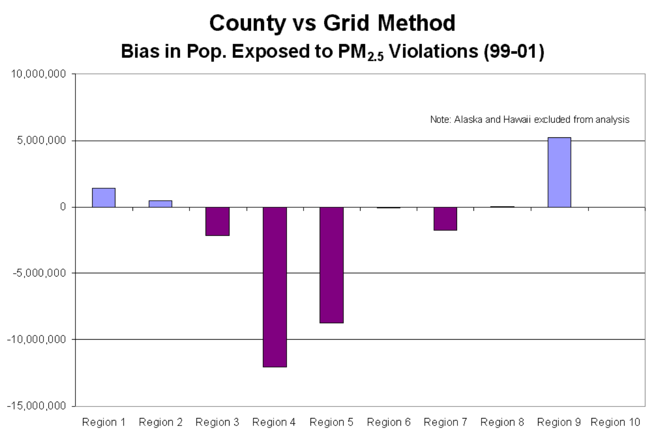


Figure 4.21

EPA Region 4 also examined violations of the $PM_{2.5}$ annual NAAQS using this Grid method, and MSA and county methods. As can be seen from Figure 4.21, Region 4 is again biased low more than 10 million people for this pollutant as well. Again, these biases occur for different reasons for different regions of the country. In Region 4, the $PM_{2.5}$ air quality problem covers large areas of the region. The only way to accurately document the total population being exposed to $PM_{2.5}$ violations of the annual NAAQS using current EPA methods (County and MSA statistics) would be to site a $PM_{2.5}$ monitor in almost every county in Region 4. This is not a desirable option. A more cost effective and accurate method would be to employ spatial analyses.

Another benefit of using spatial analyses is that it is easier and more accurate to build the groundwork for investigations into the possible synergistic effects of exposure to multiple pollutants. By employing the grid math capabilities of spatial analysis, it is possible to overlay many pollution grids over a population grid, not just a single pollution grid over a population grid. This can be done to establish not only where people are being exposed to many pollutants, but also how many people are being exposed to those multiple pollutants. This type of analysis is something that is not available in current EPA publications like the Trends Report or Factbook. If this type of analysis were attempted using current EPA methods (county and MSA statistics described above) for expressing exposed populations, the data gets reduced down to a violating subset of just those limited areas where only O_3 and $PM_{2.5}$ monitoring are being performed. Figure 4.22 summarizes by Region total population being exposed to violations of both the 8-Hr O_3 and $PM_{2.5}$ annual NAAQS by using the Grid method. Region 4 is clearly shown in this figure as having the highest number of people exposed to violations of both NAAQS. The bias between the EPA county method statistic and the Grid method for total population being exposed to violations of both the 8-Hr O_3 and $PM_{2.5}$ annual NAAQS is shown in Figure 4.23.

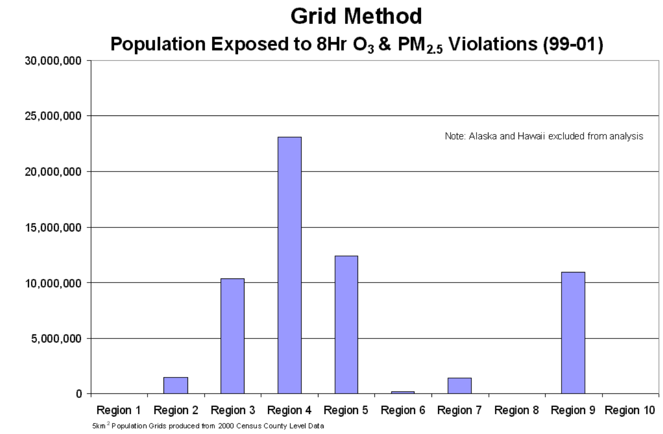


Figure 4.22

EPA's usage of these county and MSA statistics to document the amount of people being exposed to violations of the NAAQS results in Region 4 populations not being completely and accurately summarized. This negative bias occurs when using the complete O_3 and $PM_{2.5}$ monitoring networks that are currently available. If EPA Region 4 were to reduce the number of O_3 or $PM_{2.5}$ monitors in its ambient networks from their current level, this bias described here would only be exacerbated. Because of this, and other reasons cited earlier in this assessment, EPA Region 4 will not be recommending that any of its O_3 or $PM_{2.5}$ monitors be terminated as a result of this assessment. If EPA changes to methods based on spatial analyses to document the number of people that are being exposed to violations of the NAAQS, Region 4 may at that time investigate again if it is prudent to eliminate any O_3 or $PM_{2.5}$ monitors.

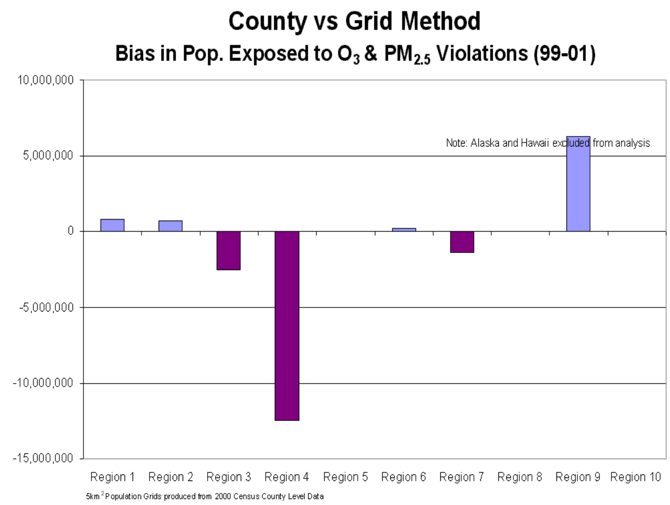


Figure 4.23

In addition to demonstrating the need for additional monitoring in rural areas to improve spatial interpolation of ozone exposure, this analysis shows a fundamental flaw in some of EPA's reporting of population exposure to violations of the O_3 and $PM_{2.5}$ NAAQS. EPA has historically assumed that if any monitor in an MSA or county was experiencing a violation, then anyone in that area is experiencing exposure to levels above the standard. This is a conservative assumption, designed in part to account for the inability to know for certain the ozone level at any given location, when only a limited number of ozone monitors are deployed. Spatial analysis techniques for interpolating data offer a way to overcome this problem of limited monitors, particularly in areas which now have a reasonably dense network of monitors. In several of the cases above (San Diego, Phoenix, parts of Los Angles), the interpolation of the O_3 data (and the 8-Hr O_3 standard itself) strongly argues that significant portions of many MSAs are not experiencing exposure to O_3 concentrations above the level of the 8-Hr O_3 NAAQS. Conversely, other areas such as Region 4, may be experiencing O_3 exposures above the level of the NAAQS greater than is currently being assumed. Here the interpolation evidence is weaker because the documentation of the actual ozone levels though direct monitoring is more sparse. Region 4 needs more ozone monitors to refine spatial analyses. The number and placement of these additional monitors will depend on how well EPA wants to be able to define these spatial data.

The first phase for the incorporation of these spatial analyses into the work that EPA performs with environmental data should be to define the minimum acceptable gridcell size and minimum acceptable gridcell precision of the interpolation. Neither of these has currently been done. For the spatial analyses in this regional network assessment, a gridcell size of 5 km^2 was chosen. After these gridcell properties have been determined, EPA next needs to develop the means and methods for "challenging" the interpolation so that both the precision and accuracy of the gridcells can be determined. While some interpolation methods, such as kriging, also compute the error of each gridcell along with the interpolated concentration, this should not be the sole measure of the certainty of the interpolated gridcells. Without challenging the interpolation method with data that has not been used to directly compute the gridcells, there will not be any verifiable quality assurance (QA) associated with the interpolated pollution isopleths. These minimum acceptable precision, accuracy, size of the gridcell, methods and procedures to perform quality control (QC), and the procedures to assure the quality of the data need to be defined by EPA through new regulations and guideline documents. There is a need to develop these new regulations and guidance documents as soon as possible, since EPA is already issuing spatial data to the public via AirNow and these new QA/QC methods have not been developed or implemented.

Nonetheless, EPA is encouraging the use of these techniques as part of its AirNow air quality reporting and through its memo "Use of Spatial Data Analyses" dated May 21, 2002. Region 4 is convinced that these spatial analyses developed for this Regional Assessment do offer the potential to significantly improve estimates of population exposure. While O_3 monitoring networks may need further refinement in lightly monitored rural areas to project the interpolation of O_3 concentrations more accurately, these spatial analysis techniques appear to be a vastly improved method for estimating population exposures.

EPA needs to use these network assessments and spatial analyses as an opportunity to address the monitoring disincentives that currently exist in our ambient air monitoring networks. These monitoring disincentives hinder EPAs ability to accurately document the total population being exposed to air pollution. Due to these monitoring disincentives, the population figures cited by EPA in the Trends Report and Factbook as the number of people living in violating areas are probably more reflective of the number of people who are living in areas that need control strategies implemented as opposed to the total number of people who are being exposed to the air pollution. These spatial analyses, if supported with additional regulations and guideline documents, offer the opportunity for EPA to assist the scientific community in accurately addressing the extent of the air quality problems for O_3 and $PM_{2.5}$. The use of spatial analyses enable this to be done while still allowing the monitoring networks to be used for more traditional purposes by policy regulators. These spatial analyses offer a means to document the extent to which downwind populations are being exposed to air quality violating the NAAQS, while not punishing these same communities with nonattainment determinations (as would happen if these same areas had O_3 monitors sited within them).

EPA is now well established in its reporting of ground level ozone warnings to the public via spatial techniques through ozone maps on AirNow. The success of AirNow with reporting ozone to the public is prompting EPA to move forward with delivering these spatial data to the public for other pollutants as well, like $PM_{2.5}$. However, these older methods used in the Trends Report and Factbook, which closely resemble the manner in which policy decisions are made regarding nonattainment, are still the "official" measure of O_3 and $PM_{2.5}$ exposure. This discrepancy needs to be resolved. Region 4 is encouraged by the May 21, 2002 memo, and hopes that spatial analyses promoted through this memo are used to resolve these discrepancies. Spatial analyses should not only used to improve the design of monitoring networks, but also foster the development of new regulations and guideline documents to determine the minimum gridcell size and gridcell precision that is acceptable to EPA, and to institute new methodologies to more accurately document exposed populations. Region 4 would like to assist the EPA OAQPS in the development and implementation of these new analysis techniques.

V. Reassessment of Ozone Monitoring Seasons for Region 4 States

V. (A) Background and Assessment Criteria

Part 58, Appendix D, of the Code of Federal Regulations (40 CFR 58, Appendix D) establishes an "ozone season" for each state during which ozone monitoring is required for all NAMS and SLAMS. EPA's basis for selecting and modifying these ozone monitoring seasons is described in the guidance document *Guideline for Selecting and Modifying the Ozone Monitoring Season Based on an 8-Hour Ozone Standard* (June 1998, a EPA-454/R-98-001). For states that report exceedances of the 8-hour NAAQS, the guidance recommends use of three main criteria to evaluate the most recent 6 years of SLAMS monitoring data in EPA's Aerometric Information Retrieval System (AIRS) and determine an appropriate ozone monitoring season:

EPA Guidance Criteria:

1. Define the ozone monitoring season as "the continuous period that includes all months showing at least one 8-hour average concentration $\geq$0.080 ppm [parts per million]."
2. If 8-hour average concentrations $\geq$0.080 ppm begin to appear at the boundaries of the designated ozone monitoring season, due to factors such as urban growth or meteorological conditions, extend the ozone monitoring season by one month beyond the designated boundary of the season.
3. Lengthen monitoring seasons in neighboring states, as needed, to ensure similar seasons in areas of transport or within EPA Regional boundaries.

The guidance identifies additional criteria to be used in establishing ozone monitoring seasons for states that have no exceedances or lack ozone monitoring data. The monitoring season that is selected in accordance with this guidance serves as the composite (8-hour and 1-hour ozone) monitoring season for that state, unless the 1-hour NAAQS is revoked for an area, in which case it serves as the 8-hour ozone monitoring season.

An assessment that utilizes the EPA guidance criteria would likely result in selection of an ozone season that includes not only months for which states are likely to report an exceedance of the 8-hour ozone NAAQS, but months for which states are likely to report maximum concentrations that only approach the level of an exceedance (i.e. in the range of 0.080 to 0.085 ppm). Region 4 believes that this approach may be overly conservative. Ozone monitoring data is primarily used to estimate annual NAAQS exceedances, provide the basis for demonstrating attainment/nonattainment with the NAAQS, and notify the public of ozone health effects (reporting the Air Quality Index (AQI)). A secondary use is to better characterize trends in 8-hour ozone concentrations throughout the monitoring season. Implementation of an ozone season consistent with the guidance may result in the collection of data that does not substantially address these goals, making the expenditure of additional resources required to collect it difficult to justify.

A primary goal of the network assessment is to identify opportunities for streamlining and cost savings wherever possible. In keeping with this goal, Region 4 is including this ozone season evaluation in the assessment, to determine if adjustment of the ozone season in accordance with Region 4 and/or guidance criteria would result in any reductions in ozone monitoring, and hence, cost savings. Any reductions identified would supplement results of the Region 4 network assessment, which did not identify significant opportunities for a reduction in the number of ozone monitors. Consistent with this goal, Region 4 believes that the following additional criteria should be included in the evaluation of the ozone monitoring seasons:

Region 4 Criteria:

1. Determine the months for which a value at or above the 8-hour NAAQS exceedance level(i.e. 0.085 ppm) was reported.
2. Determine how exceedances reported during months that bound the ozone season affect the 4th highest value for that monitor-year, and associated design values.

If consideration of these criteria suggests selection of a shorter ozone season, that season should also be evaluated to ensure that it does not:

3. Exclude any months for which an exceedance of the 1-hour ozone NAAQS was reported during the 1996-2001 evaluation period
4. Significantly impact EPA's ability to accurately report the AQI to the public on a year-round basis

Inclusion of these four additional criteria in the evaluation should result in selection of an ozone season that fulfills the primary ozone monitoring goals of reporting the AQI and demonstrating attainment/nonattainment with the NAAQS, while minimizing the expenditure of funds on the collection of relatively low-value data.

V. (B) Current Ozone Seasons and Database Used to Perform the Current Evaluation

The last evaluation of ozone monitoring seasons for Region 4 states was completed in 1999, when staff examined all ozone monitoring data contained in AIRS for the 6-year period 1993-1998. All official changes to the ozone monitoring season that affected NAMS or SLAMS in Region 4 states were promulgated as modifications to the table entitled "Ozone Monitoring Season" contained in Appendix D of 40 CFR 58, in a final rulemaking package published March 4, 1999 (64FR10389). This final rule lengthened the ozone monitoring season for Alabama, Florida, Georgia, Kentucky, Mississippi and Tennessee to March-October; and retained April-October as the ozone monitoring season for North Carolina and South Carolina. At the conclusion of this evaluation, Tennessee submitted a written request to Region 4 to reevaluate the ozone monitoring seasons in three years. The following analysis, in response to this request, evaluates the current monitoring seasons to determine whether revisions are needed based first on the method proposed by Region 4 and then by the method presented in the guidance.

All SLAMS data contained in the new Air Quality System (AQS) data base, including exceptional event data, was examined for the 6-year period 1996-2001. An Oracle Discover pull, done on August 12, 2002, provided the maximum daily 8-hour average ozone concentration for all days on which this peak value equaled or exceeded ($\geq$) 0.080 ppm during the 1996-2001 time period. A second Oracle Discover pull, done on September 24, 2002, provided the maximum daily 1-hour average ozone concentration for all days on which this peak value equaled or exceeded ($\geq$) 0.120 ppm during the 1996-2001 time period.

V. (C) Region 4 Ozone Season Evaluation

Table 5.1 lists the total number of daily maximum 8-hour ozone concentrations $\geq$ 0.080 ppm (hits) that were reported each month, by state, during the 6-year period: 1996-2001. This summary of the Oracle Discover pull results provides the starting point for evaluating state ozone seasons in accordance with both Region 4 criteria 1 and EPA guidance criteria 1.

Table 5.1: Total Daily Maximum 8-Hour Average Ozone Concentrations $\geq$ 0.080 Reported during 1996-2001

MONTH / STATE	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
AL	-	-	1	8	67	66	128	247	104	3	-	-
FL	0	4	24	111	315	102	103	150	90	45	7	0
GA	-	-	1	4	94	112	217	288	126	2	-	-
KY	-	-	0	3	127	207	217	271	176	6	-	-
MS	-	-	3	16	79	28	57	167	59	16	-	-
NC	-	-	-	14	302	521	526	566	215	28	-	-
SC	0	0	1	12	175	184	187	285	101	10	0	0
TN	-	-	1	10	181	294	285	400	253	15	-	-
TOTAL		4	31	178	1340	1514	1720	2374	1124	125	7	

= Current Ozone Monitoring Season

Appendix C presents this same information in the more visual format of state-by-state histograms. A preliminary evaluation of these data, in accordance with EPA guidance criteria 1, would result in the selection of state ozone seasons that include all months for which one or more hits were reported. Region 4 criteria 1 recommends selection of an ozone season that includes only months during which the subset of hits that are also $\geq$ 0.085 ppm (exceedances) were reported. The total number of exceedances was not calculated for months that recorded a large number of hits (i.e. >50), since these months also probably recorded a large number of exceedances, making them critical to the determination of design value and/or attainment status. Therefore, with the exception of Florida, only March, April and October were included in the Region 4 criteria 1 analysis presented in Table 5.2 below.

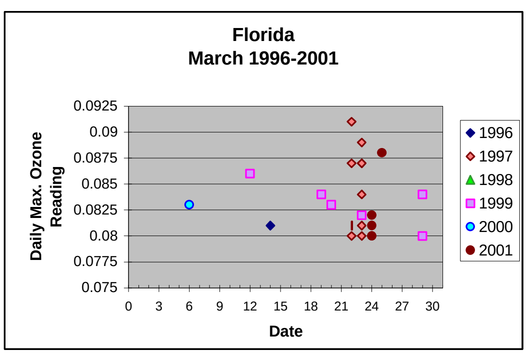
Table 5.2: Number of Exceedances/Hits (Values ≥ 0.085 ppm / ≥ 0.080 ppm) During 1996-2001 for Months Bounding Current Ozone Monitoring Seasons

STATE*	MAR 1-31	APR 1-15	APR 15-31	OCT 1-14	OCT 15-31
Alabama	0/1	0/1	3/7	0/0	0/3
Georgia	0/1	0/0	1/4	0/0	1/2
Kentucky	0/0	0/0	1/3	0/2	1/4
Mississippi	1/3	0/1	3/15	1/4	2/12
North Carolina	N/A	1/6	2/8	1/12	1/16
South Carolina	1/1	0/2	2/10	0/3	1/7
Tennessee	0/1	0/4	1/6	2/8	1/7
TOTAL	2/7	1/14	13/53	4/29	7/51

* Florida is not included, since data suggest that a longer monitoring season is needed for this State.

Florida presents a slightly different case, as it recorded a minimal number of hits during February and November - two months during which other states recorded none. Florida also recorded significantly more hits than most other states during March and October. The plots shown in Figure 5.1 below reveal that many of these hits were also exceedances, indicating that Florida's ozone season must include these two months to ensure calculation of a representative design value. As such, Florida is not included in Table 5.2.

Figure 5.1: Daily Peak 8-Hour Average Ozone Concentrations recorded by Florida During March and October, 1996 - 2001



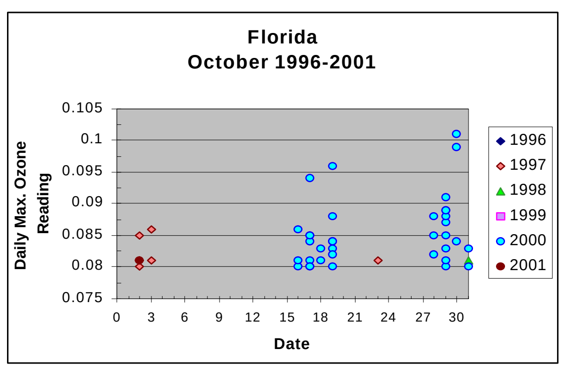


Table 5.2 above summarizes the number of exceedances and hits reported for each state

except Florida for the three months of interest. To facilitate further analysis, the results for April and October are reported for half-month periods. March results are reported for the entire month, since few hits were reported during this month. These results are illustrated in greater detail in Appendix C, via x-y plots similar to the ones shown above for Florida. An individual plot illustrating the date and magnitude of all recorded hits was prepared for each boundary month for each Region 4 state.

Most Region 4 states recorded few exceedances during March, April and October; a total of 27 exceedances were recorded in Region 4 during the entire 6-year period. Only three exceedances were recorded between March 1 and April 15. A slightly greater number of exceedances were recorded during each half of October. The greatest number of exceedances were recorded during the second half of April. This distribution suggests that the Region 4 ozone monitoring data collected during these three months may have had minimal impact on ozone design values. However, a relative ranking analysis of these exceedances, in accordance with Region 4 criteria 2, is needed to determine if the ozone monitoring season can be shortened to exclude one or more months without adversely impacting ozone monitoring goals.

All March, April and October values $\geq$ 0.085 ppm were ranked to determine how they compared with the 1st- 4th maximum values for the monitor-year in which they occurred, and to determine if they affected the 1996-2001 design values for any states (see Table 5.3 on the following page). The locations of the monitors that recorded exceedances during March, April or October are shown in Figure 5.2 below.

Figure 5.2

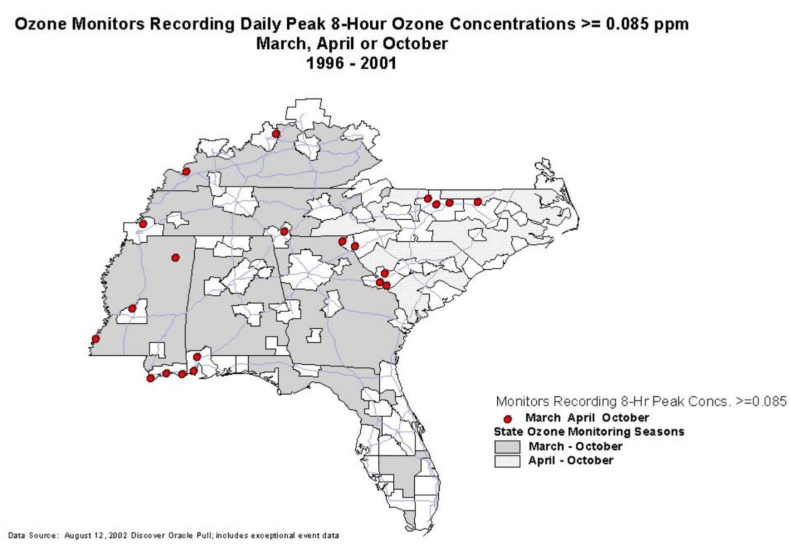


Table 5.3: Relative Ranking of Region 4 Exceedances Reported March-April-October, 1996-2001

											Changes Resulting from Exclusion of March-April October Exceedences			
			Date of	Ozone	Relative	# of Values	# of Values	Design Values			4th Maximum	Design Values		
Monitor ID	City	County	Exceedence	Conc. (ppb)	Ranking	≥ 85 ppb	≥ 80 ppb	1997-1999	1998-2000	1999-2001	Value	1997-1999	1998-2000	1999-2001
ALABAMA														
01-097-0028-1	Mobile	Mobile	April 19, 1999	85	2	2	2	0.076	N/A	N/A	no change	no change	N/A	N/A
01-097-2005-1	Theodore	Mobile	April 19, 1999	95	1	3	11	N/A	N/A	0.083	no change	N/A	N/A	no change
01-097-2005-1	Theodore	Mobile	April 29, 2000	85	11	11	16	N/A	N/A	0.083	no change	N/A	N/A	no change
GEORGIA														
13-245-0091-1	Augusta	Richmond	October 17, 2000	85	6	6	12	0.092	0.093	0.087	no change	N/A	no change	no change
13-245-0091-1	Augusta	Richmond	April 28, 2001	86	2	3	6	0.092	0.093	0.087	0.082 to 0.081	N/A	N/A	no change
KENTUCKY														
21-139-0003-1	(rural)	Livingston	October 27, 1999	87	17	22	32	0.096	0.091	0.088	no change	no change	no change	no change
21-185-0004-1	(rural)	Oldham	April 30, 2000	85	5	5	11	0.096	0.099	0.094	no change	N/A	no change	no change
MISSISSIPPI														
28-001-0004-1	Natchez	Adams	March 23, 1996	86	1	1	5	0.081	0.085	0.082	no change	N/A	N/A	N/A
28-045-0001-1	(rural)	Hancock	April 19, 1999	94	1	9	15	0.086	0.089	0.087	0.091 to 0.090	no change	no change	no change
28-047-0008-1	Gulfport	Harrison	April 19, 1999	99	2	7	14	N/A	N/A	0.089	no change	N/A	N/A	no change
28-047-0008-1	Gulfport	Harrison	October 29, 2000	86	7	8	19	N/A	N/A	0.089	no change	N/A	N/A	no change
28-059-0006-1	Pascagoula	Jackson	April 19, 1999	89	4	4	9	0.094	0.092	0.088	0.089 to 0.083	0.092	0.090	0.086
28-081-0005-1	Tupelo	Lee	October 28, 1999	85	10	10	22	N/A	0.089	0.086	no change	N/A	no change	no change
28-089-0002-1	Canton	Madison	October 2, 1998	86	4	4	8	0.082	0.083	0.079	0.086 to 0.083	0.081	0.082	no change
NORTH CAROLINA														
37-067-0027-1	(rural)	Forsyth	April 12, 1996	86	2	3	7	0.084	0.084	0.082	no change	N/A	N/A	N/A
37-067-0027-1	(rural)	Forsyth	April 18, 1996	86	3	3	7	0.084	0.084	0.082	no change	N/A	N/A	N/A
37-067-1008-1	(rural)	Forsyth	October 8, 1997	85	12	12	21	0.094	0.093	0.093	no change	no change	N/A	N/A
37-077-0001-1	(rural)	Granville	October 16, 2000	88	6	10	11	0.092	0.090	0.088	no change	N/A	no change	no change
37-081-0011-1	(rural)	Guilford	April 18, 1996	85	3	3	6	0.092	0.094	0.090	no change	N/A	N/A	N/A
SOUTH CAROLINA														
45-003-0003-2	(rural)	Aiken	April 19, 1997	85	5	5	9	0.089	0.092	0.086	no change	no change	N/A	N/A
45-037-0001-1	(rural)	Edgefield	October 28, 1998	87	8	14	21	0.085	0.085	0.081	no change	no change	no change	N/A
45-073-0001-1	(rural)	Oconee	March 8 2000	86	1	3	5	0.086	0.087	0.082	0.082 to 0.081	N/A	no change	no change
45-077-0002-1	Clemson	Pickens	April 26, 1998	90	5	6	12	0.090	0.090	0.088	no change	no change	no change	N/A
TENNESSEE														
47-065-1011-1	(rural)	Hamilton	April 25, 1998	89	15	22	29	0.095	0.098	0.093	no change	no change	no change	N/A
47-157-1004-1	(rural)	Shelby	October 4, 1997	86	7	7	13	0.095	0.097	0.093	no change	no change	N/A	N/A
47-157-1004-1	(rural)	Shelby	October 2, 1999	87	15	16	29	0.095	0.097	0.093	no change	no change	no change	no change
47-157-1004-1	(rural)	Shelby	October 27, 1999	90	12	16	29	0.095	0.097	0.093	no change	no change	no change	no change

The most striking result of the ranking analysis is the number of high-ranking March-April-October exceedances. Of 27 exceedances, 12 provided the 1^{st}, 2^{nd}, 3^{rd} or 4^{th} maximum value for the applicable monitor-year. An additional seven exceedances provided a fifth, sixth or seventh maximum value. The remaining eight exceedances ranked 11 or higher, and clearly had no impact on the design value for a given monitor-year. However, further examination of the 19 exceedances which ranked as 1^{st}-7^{th} maximum concentrations is needed. Exceedances that ranked 1^{st} through 4^{th} were evaluated, as these values have the clear potential to impact 4^{th} maximum values and design values. Exceedances that ranked 5^{th} through 7^{th} were considered, since these may be representative of 4^{th} maximum and/or design values for future years (e.g. due to variations in meteorological conditions). This evaluation was done on a state-by-state basis.

Alabama reported a total of three April exceedances at two different Mobile-area monitors during this 6-year period. The 11^{th}-ranked exceedance in 2000 did not impact the design value for the subject monitor. The 2^{nd}-ranked exceedance in 1999 did not impact the exceedance status of affected design values, since this monitor reported only two values $\geq$0.080 ppm for the entire ozone season. The 1^{st} ranked exceedance in 1999 was potentially critical, since it provided one of only three values $\geq$0.085 ppm for the subject monitor-year. However, all affected design values were unchanged when recalculated with these three exceedances excluded. Thus, the magnitude and occurrence of March-April-October exceedances suggest that operation of an ozone monitoring in the Mobile area during April could potentially affect design values for this area. However, 1996-2001 ozone monitoring data recorded during these months had no actual impact on design values.

Georgia reported one April and one October exceedance at the same Augusta-area monitor. The April 2001 exceedance provided the 2^{nd} of three values $\geq$0.085 ppm, and the October 2000 exceedance provided the 6^{th} of six values $\geq$0.085 ppm. Operation of a monitor in the Augusta area in April and October is thus potentially critical to calculation of a representative design value for this area. However, recalculation of design values with these two exceedances excluded resulted in no change to the 2000 4^{th} maximum value, a 0.001 ppm decrease in the 2001 4^{th} maximum value, and no change to any affected design values.

Kentucky reported one exceedance in April and one in October. The 17^{th}-ranked October exceedance, which occurred in the rural Paducah area, did not impact the design value for the subject monitor. The 5^{th}-ranked exceedance of 0.085 ppm which occurred in the Louisville area provided the 5^{th} of five values $\geq$0.085 ppm for this monitor in 2000. This value also did not impact the most recent design values for this monitor, which ranged from 0.094 to 0.099 ppm. In summary, ozone monitoring results for March, April and October in Kentucky do not appear critical to the calculation of representative design values for the Commonwealth.

Mississippi recorded the greatest number of exceedances during the 1996-2001 period: one in March, three in April and three in October. Three coastal monitors recorded four of these exceedances. One coastal exceedance, recorded in Pascagoula, was the 4^{th}-ranked of four values $\geq$0.085 ppm for the subject monitor-year. Exclusion of this exceedance from the calculations decreased the subject 4th maximum value by 0.006 ppm, and each of the affected design values by 0.002 ppm. Exclusion of the other three coastal exceedances from calculations decreased one of the subject 4th maximum values by 0.001 ppm, but had no impact on any of the affected design values. An October exceedance, recorded in rural northern Mississippi, provided the 10th-ranked value for the subject monitor-year. A March exceedance, recorded at a rural southwestern monitor, provided the only exceedance for the subject monitor-year. Exclusion of this value from calculations did not impact the subject 4th maximum value. An April exceedance, recorded just north of Jackson, provided the 4th-ranked value of four values $\geq$0.085 ppm for the subject monitor-year. Exclusion of this value from calculations decreased the subject 4th maximum value by 0.003 ppm and each of the affected design values by 0.001 ppm. In summary, the 1996-2001 ozone monitoring data recorded during April and October did have a small impact on design values for the Jackson and coastal Mississippi areas, although not enough to impact the regulatory decision making process. The results suggest that monitoring in these areas during these months has the potential to impact ozone monitoring goals.

North Carolina recorded three April and two October exceedances. The two October exceedances, which provided the 12th of twelve values $\geq$0.085 ppm and the 6th of ten values $\geq$0.085 ppm for the affected monitor-years, clearly had no impact on the subject 4th maximum values,. All three April exceedances, recorded at a monitors in the Greensboro-Winston Salem area, provided the 2nd- or 3rd-ranked value for monitors that recorded only three values $\geq$0.085 ppm for the subject monitor year. However, exclusion of these three values from calculations had no effect on either the subject 4th maximum values or the affected design values. In summary, the magnitude and occurrence of April-October exceedances suggest that April ozone monitoring in the Greensboro-Winston Salem area could potentially affect design values for this area. However, 1996-2001 ozone monitoring data recorded during these months had no actual impact on design values.

South Carolina recorded one March, two April and one October exceedance. The October exceedance had no impact on the 4th maximum value for the subject monitor, providing the 8th of fourteen values $\geq$0.085 ppm. One of the April exceedances, recorded at an Aiken area monitor, provided the 5th of five values $\geq$0.085 ppm. Two regional-scale monitors located in rural northwestern South Carolina provided the remaining March and April exceedances. The March exceedance provided the 1st of three values $\geq$0.085 ppm, while the April exceedance provided the 5th of six values $\geq$0.085 ppm. Exclusion of the latter three values from calculations resulted in a 0.001 ppm decrease in one of the three subject 4th maximum values, and no change in any of the affected design values. In summary, the magnitude and occurrence of March-April-October exceedances suggest that April ozone monitoring in the Aiken, South Carolina area and rural northwestern South Carolina could potentially affect design values for this area. However, 1996-2001 ozone monitoring data recorded during these months had no actual impact on design values.

Tennessee recorded one April and three October exceedances, but none affected the 4th maximum value for the subject monitor-years. Three of the exceedances provided the 12th- , 15th

- and 17th-ranked values for the subject monitor year. The fourth provided the 7th-ranked of seven values, but the 0.086 ppm magnitude of this exceedance was significantly lower than the most recent three design values for the monitor, which ranged from 0.093 to 0.097 ppm. In summary, ozone monitoring results for March, April and October in Tennessee do not appear critical to the calculation of representative design values for the State.

Based on the above evaluation, Kentucky and Tennessee are highly unlikely to record ozone concentrations during March, April and October that affect design values or the regulatory decision-making process. In 1996-2001, neither of these states recorded an exceedance during these three months that ranked among the four highest values for a given monitor-year. During this same 6-year period, Alabama, Georgia, Mississippi, North Carolina and South Carolina recorded exceedances in a small number of areas that ranked among the four highest values for a given monitor-year. These findings suggest that the reporting of March-April-October ozone monitoring data for these states has the potential to affect design values in a way that would alter the regulatory decision making process. However, the actual impact of March, April and October exceedances on regulatory decision making during 1996-2001 was nonexistent. The exclusion of March exceedances had no impact on design values. The exclusion of April and October exceedances resulted in downward revision of five design values for Mississippi by 0.001-0.002 ppm. In no case, did the revision of a design value due to exclusion of an exceedance alter the attainment status of an area. Thus, from a very conservative perspective, April and October monitoring for a small number of critical areas in these states may be justified. However, operation of the entire state ozone monitoring networks for Alabama, Georgia, Mississippi, North Carolina and South Carolina during these months appears unwarranted, since this would not provide an appreciable amount of data critical to the ozone monitoring goal of demonstrating attainment/nonattainment with the NAAQS. Likewise, extending the operation of entire state monitoring networks to include adjacent months (i.e. February, March or November), consistent with EPA guidance criteria 2, also appears unwarranted, yielding little additional data of significant value for the cost.

The next factors considered in Region 4's evaluation of ozone monitoring seasons were:

i) EPA guidance criteria 3, recommending regional consistency among selected ozone monitoring seasons, and
ii) The secondary ozone monitoring objective of better characterizing trends in 8-hour ozone concentrations throughout the monitoring season.

Both of these objectives could be accomplished by adopting a uniform hybrid ozone monitoring season for all Region 4 states except Florida. This hybrid season would combine a May-September core ozone season of full network operation with year-round operation of a small subset of carefully-selected monitors. Florida’s core season would remain as March-October to ensure recording of the multiple hits and exceedances that typically occur during these months.

Operating a small subset of monitors beyond the core ozone season satisfies several objectives. First, it ensures implementation of a regionally consistent ozone monitoring program. Second, it allows for the operation of monitors at critical areas identified in the preceding evaluation during March, April and October. Third, it provides year-round data that can be used to:

(1) identify and describe long-term trends in ozone concentration
(2) supplement the data collected at proposed NCore Level 2 sites (sites targeted for the collection of continuous data for a wide range of parameters on a year-round basis)
(3) improve the quality of future ozone season evaluations
(4) contribute valuable data to modeling and research programs

Since the proposed hybrid monitoring season shortens the core ozone monitoring season for all states except Florida from March-October to May-September, in accordance Region 4's proposed evaluation criteria, the ozone data for these states must be evaluated to determine if the elimination of full network monitoring during March, April and October affects EPA’s ability to detect 1-hour ozone NAAQS exceedances or accurately report the AQI.

Table 5.4 lists the total number of daily maximum 1-hour ozone concentrations $\geq$ 0.120 ppm (hits) that were reported each month for each state during the 6-year period: 1996-2001.

Table 5.4: Total Daily Maximum 1-Hour Average Ozone Concentrations $\geq$ 0.120 Reported during 1996-2001

MONTH	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
STATE												
AL	-	-	0	0	2	7	14	23	7	0	-	-
FL	0	0	0	0	28	13	3	9	5	3	0	0
GA	-	-	0	0	17	35	66	130	25	0	-	-
KY	-	-	0	0	10	7	15	8	24	0	-	-
MS	-	-	0	0	2	2	5	7	0	0	-	-
NC	-	-	-	0	8	49	31	57	24	0	-	-
SC	0	0	0	0	1	2	3	15	3	0	0	0
TN	-	-	0	0	13	28	37	53	20	0	-	-
TOTAL			0	0	81	143	174	302	108	3	7	

(shaded) = Current Ozone Monitoring Season

This summary of the September 24, 2002, Oracle Discover pull results reveals that, with the exception of Florida, all states recorded 1-hour hits (i.e. values $\geq$0.120) only during May-September. Florida recorded three hits in October. Two Florida monitors recorded a concentration of 0.0122 ppm on October 29, and one monitor recorded an exceedance (0.0127 ppm) on October 30. Based on these findings, reduction of the core ozone monitoring season to May-September for the remaining states would not impact EPA’s ability to report exceedances of the 1-hour ozone NAAQS.

Historically, the controlling AQI reporting parameter in Region 4 is either ozone or PM2.5. A preliminary pull of the AMP410S report for Region 4 suggests that either of these pollutants may be the controlling parameter during March, April and October. However, AQS personnel have notified Region 4 staff that there are currently discrepancies in computations for the Air Quality Index Summary Report (AMP410S). A Discover pull of AQI values also cannot be done, since these values are not stored in any table, but computed "on the fly" for reports. Thus, the precise impact of March-April-October ozone monitoring on EPA’s ability to accurately report the AQI for these months cannot be determined at the present time. This analysis will be finalized in the final Region 4 network assessment report, provide the AMP410S report is corrected in time to permit completion of the analysis.

In the interim, it appears that year-round operation of a small subset of monitors can address the AQI reporting requirement. 40 CFR Part 58.50 requires daily reporting of the AQI only for MSAs with populations >350,000. This requirement could be satisfied by operating an ozone monitor year-round in each of these MSAs. If the final AMP410S report reveals that ozone is the controlling March-April-October pollutant for only some of these MSAs, the number of year-round ozone monitors needed to address AQI reporting could be further reduced. In summary, regardless of the results of the final AQI analysis, an additional benefit of limited year-round monitoring is accurate AQI reporting to the public.

The key to effective implementation of the hybrid ozone season option is careful selection of the year-round monitoring sites. Based on the preceding discussions, several selection criteria must be considered. First, do the selected sites include the critical areas identified in the relative-ranking evaluation of March-April-October exceedances. Second, do the selected sites allow accurate reporting of the AQI. Third, are the selected sites well-suited for documenting ozone concentration trends and supplementing research and modeling needs. The September 1, 2002, draft National Ambient Air Monitoring Strategy provides a useful starting point for defining effective trends siting criteria. This draft document proposes a national network consisting of NCore Level 1, 2 and 3 sites. NCore Level 2 Sites are defined as “the mainstream multiple pollutant sites in the network [that] best reflect the design attributes [of the Ncore network].” Designed to be useful in determining criteria pollutant trends, they are in many ways analogous to the current NAMS network. Use of the NCore Level 2 design attributes listed in the draft strategy document would result in the selection of a small subset of monitors appropriate for characterization of general, long-term trends in ozone concentration. Below are some of the key NCore Level 2 siting criteria:

Include a modest number of ‘backbone’ sites (75 nation-wide) to promote reasonable and manageable network realignment and constrain network growth

Include a cross-section of geographically and air-quality diverse areas, capable of providing a representative “report card” of national air quality and acting as reference sites for long-term epidemiological studies.

Include primarily a cross section of urban areas (75-85%), emphasizing major areas (>1,000,000 population), but including a mix of large (500,000 - 1,000,000) and medium (250,000 - 500,000) cities

Include a lesser number of rural sites (15-25%) to capture important rural transport corridors and regionally representative background conditions. Some rural sites should also characterize urban-regional coupling (i.e. urban contribution to the larger regional mix)

Leverage selected sites with existing air monitoring sites where practical to conserve resources and facilitate collection of multi-pollutant data useful in integrated air quality analysis and management

For most Region 4 states, all of these criteria can be met by operating 10% of a state's full SLAMS ozone network, or two state ozone monitors, whichever number is greater (a minimum of 2 monitors is needed to cover critical areas and major MSAs and meet all NCore Level 2 objectives) (see Table 5.5). For states that have a relatively small ozone network, combined with multiple critical monitoring areas and/or multiple MSAs reporting the AQI, additional monitors may be needed to meet all year-round ozone monitoring objectives. The exact number of additional monitors needed should be determined on a state-by-state basis. However, in general, year-round operation of a small subset of a states' SLAMS ozone network, combined with a May-September core ozone monitoring season, would be less costly than operating the full state ozone monitoring network for March-October.

Table 5.5: Size of Region 4 State Ozone Monitoring Networks

STATE	# OF OZONE MONITORS		10% of SLAMS/NAMS or 2 MONITORS
	SLAMS/NAMS	SLAMS/NAMS+SPM	
Alabama	13	19	2
Florida	48	54	5
Georgia	7	21	2
Kentucky	18	31	2
Mississippi	11	14	2
North Carolina	28	46	3
South Carolina	18	23	2
Tennessee	15	22	2

V. (D) EPA Guidance-Based Ozone Season Evaluation

Evaluation of the 1996-2001 database against EPA guidance criteria 1 (i.e. include all months for which at least one hit was reported) using the summary information presented in Table 5.1, suggests that most Region 4 states should conduct ozone monitoring from March-October. All Region 4 states that collected ozone monitoring data during March, except Kentucky, reported March hits during the1996-2001 period. North Carolina and South Carolina are not required to monitor in March. However, South Carolina, which voluntarily monitors and reports data to AQS year-round, reported one hit during March 2000. These data suggest that Kentucky and North Carolina may not need to monitor in April. All Region 4 states reported hits during October 1996-2001. Florida, which voluntarily monitors and reports data to AQS year-round, also reported hits in February and November, indicating that it’s ozone monitoring season should include these months as well.

To evaluate the database against EPA guidance criteria 2 (i.e. the occurrence of hits at the boundaries of designated ozone monitoring seasons), several figures and plots for months bounding the current ozone seasons were prepared. Table 5.2, presented earlier, lists the number of hits reported for each state during the three boundary months of March, April and October. Figures 5.3, 5.4 and 5.5 illustrate the locations of monitors reporting hits during the periods February 1-March 15, March 16-April 15, and October 15-November 30, respectively, for the 1996-2001 6-year period. Appendix C provides a series of figures that plot the occurrence date and magnitude of all reported values ≥ 0.080 ppm, for each state and boundary month.

Evaluation of the 1996-2001 database against EPA guidance criteria 2 indicates that no Region 4 states, except Florida, need conduct ozone monitoring earlier than March; but most states should extend their ozone monitoring seasons to include November. The evaluation also suggests that North Carolina’s ozone monitoring season should begin in March rather than April.

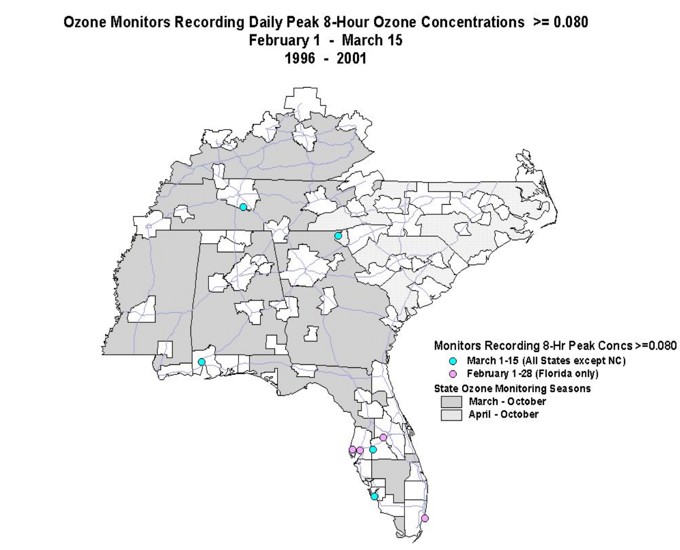


Figure 5.3

As displayed in Table 5.1 and Figure 5.3, Alabama, Georgia, Kentucky, Mississippi, and Tennessee each reported no more than one hit on or before March 15, 1996-2001. This data indicates that lengthening the current March-October ozone season for these states to include

February is unlikely to document additional ozone concentrations approaching the level of the NAAQS.

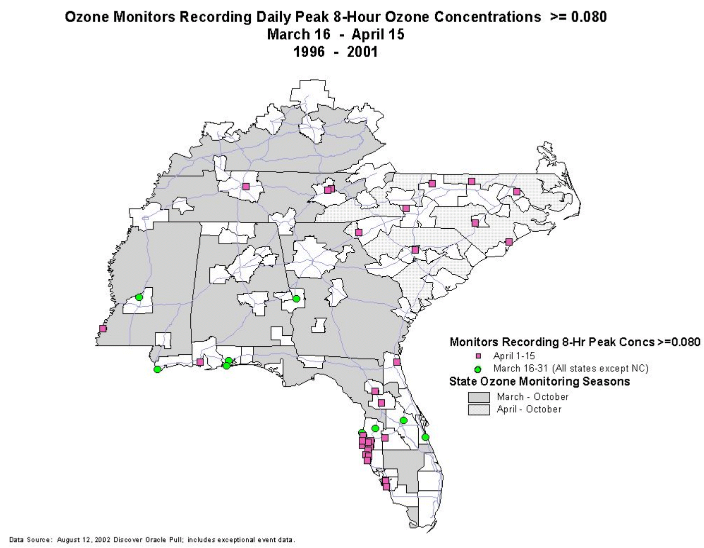


Figure 5.4

In contrast, multiple hits were reported for North Carolina and South Carolina (6 and 2, respectively) during the first 15 days of these states' current April-October ozone monitoring season (see Table 5.2 and Figure 5.4). These data indicate that lengthening the ozone season for these states to include March may document additional ozone concentrations approaching the level of the NAAQS. Observation of an actual hit in South Carolina during March 2001 provides additional support for extending its ozone monitoring season to include March.

October is currently the final month of the ozone monitoring season for all Region 4 states, and all states reported multiple peak daily 8-hour average ozone concentrations $\geq$ 0.080 ppm during October 15-31, 1996-2001 (Table 5.2 and Figure 5.5). The number of peak daily values ranges from 2 to 16 per state. The frequency and widespread geographic distribution of values $\geq$ 0.080 ppm indicate that lengthening the ozone monitoring season to include November could document additional ozone concentrations at or approaching the level of the NAAQS, although the case is less strong for states reporting few such values (i.e. Alabama, Georgia and Kentucky).

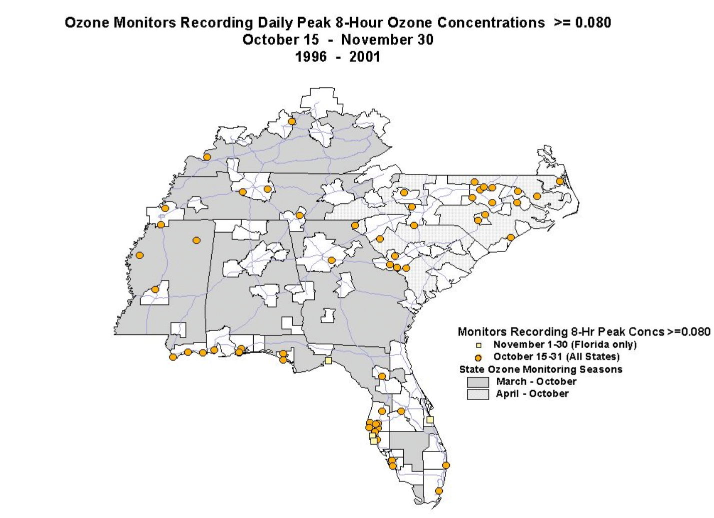


Figure 5.5

The third criteria specified in the guidance recommends implementation of consistent ozone monitoring seasons throughout areas of transport or within EPA Regional boundaries. Application of this criteria to the 1996-2001 database strengthens the arguments presented above for extending the ozone monitoring season for most Region 4 states to include March and November. Only the data reported for Kentucky and Florida provides adequate support for deviating from a March-November season. Kentucky reported no values $\geq$ 0.080 ppm during the March 1 - April 15, 1996-

2001 time period, providing little support for March monitoring. Florida reported values $\geq$ 0.080 ppm in February, indicating the need for a 10-month ozone monitoring season.

Table 5.6: Ozone Monitoring Seasons Based on Evaluation of 1996-2001 8-Hour Ozone Monitoring Data Consistent with EPA Guidance

STATE	BEGIN MONTH	END MONTH
Alabama	March	November
Florida	February	November
Georgia	March	November
Kentucky	April	November
Mississippi	March	November
North Carolina	March	November
South Carolina	March	November
Tennessee	March	November

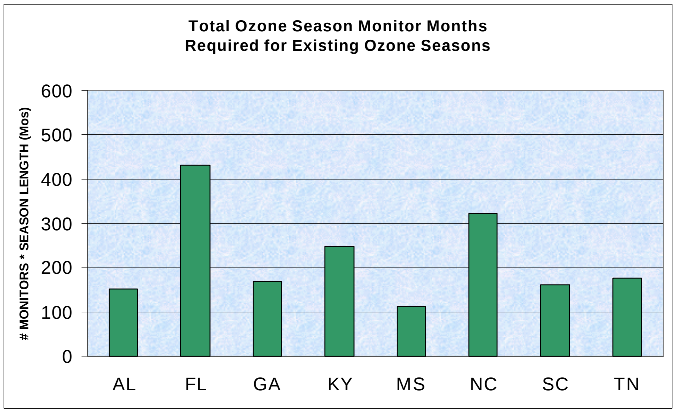
To summarize, evaluation of the 1996-2001 database consistent with EPA guidance suggests that implementation of the Region 4 state ozone monitoring seasons shown in Table 5.6 will ensure more complete, regionally consistent, documentation of all peak daily 8-hour average ozone concentrations $\geq$ 0.080 ppm.

V. (E) Relative Resource Requirements for Ozone Season Alternatives

Region 4's recommended ozone monitoring season for Region 4 states is the hybrid ozone season that combines a May-September core monitoring season of full network operation with year-round operation of a small subset of carefully-selected monitors. Based on our analysis, this ozone monitoring season will allow all Region 4 states to achieve the primary ozone monitoring goals while providing additional cost savings to the states, consistent with a primary goal of the current monitoring strategy.

To determine the cost savings, the total number of monitor-months that each state must operate to implement the current March/April-October ozone monitoring seasons was calculated by summing together the number of months of operation for each monitor in the state ozone network (Figure 5.6). These totals include both the SLAMS and SPM monitors operated by states.

Figure 5.6: Total Monitor Months Required to Implement Current Ozone Monitoring Seasons

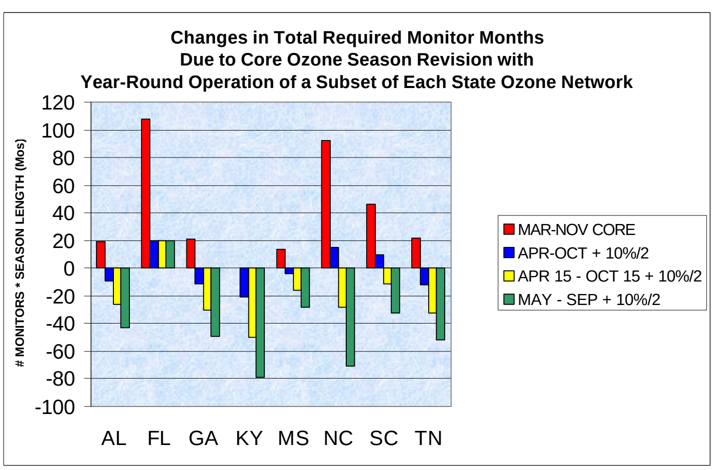


These total current monitoring months were then compared with the monitor months required to implement each of the following five options for all states but Florida (Figure 5.7):

1. The March-November core ozone season consistent with EPA guidance
2. A hybrid season with an April-October core monitoring season and year-round operation of 10%, or at least two monitors, from each state SLAMS network
3. A hybrid season with an April 15-October 15 core monitoring season and year-round operation of 10%, or at least two monitors, from each state SLAMS network
4. A hybrid season with a May-September core monitoring season and year-round operation of 10%, or at least two monitors, from each state SLAMS network

Option 1, consistent with guidance, assumes a February-November core ozone season for Florida and an April-November core ozone season for Kentucky. For options 2-4, a constant core ozone season of March-October was assumed for Florida.

Figure 5.7: Change in Required Monitor Months for Various Ozone Monitoring Season Options



Options 2 and 3 are presented as possible alternatives to the hybrid ozone season with a May-September core. Reexamination of the ranking results presented in Table 5.3 for March, April and October, reveals that eight of the twelve exceedances that ranked 1 through 4 occurred in the second half of April. Of the remaining four, two occurred in March, one occurred in the first half of April, and one occurred in the first half of October. These data suggest that as the core ozone season is expanded from May-September to include one or two additional months, the number of potentially critical exceedances missed drops off dramatically. These two alternative hybrid ozone season options may be considered in balancing the overall objectives of: (1) documenting additional concentrations that could potentially affect a design value and (2) prioritizing scarce resources to obtain data that has greater environmental value.

In summary, for most Region 4 states, implementing options 2, 3 and 4 will reduce the collection of low-value ozone data (i.e. data that does not contribute to ozone monitoring goals) to varying degrees, while providing varying degrees of cost savings. Implementation of option 4 during 1996-2001 would have proved the most efficient at meeting these goals, and would not have altered the regulatory decision-making process. Given operation of an appropriate subset of monitors, it would also have achieved the primary goal of accurate AQI reporting, and provided additional data of use in meeting several secondary ozone monitoring objectives (trends, supplemental NCore Level 2 data, research/modeling objectives). Options 2 and 3 provide even greater certainty that all ozone monitoring goals will be met in future years, in exchange for the collection of relatively greater amounts of low-value monitoring data.

VI. Current Status of Air Toxics Monitoring in Region 4

A. Introduction

The State and Local Programs within EPA, Region 4, have been active participants in air toxics monitoring. As shown in Figure 6.1, the number of air toxics monitoring sites has grown from 53 sites in 1985 to approximately 126 sites in 2003. Up until 2000, air toxics monitoring consisted primarily of individual state/local funded networks in Broward County (Florida), Georgia, Kentucky, North Carolina, and South Carolina. Each of these agencies have their own laboratories and staff to support basic air toxics monitoring and analysis. Other monitoring sites include short-term samplers used for urban air toxics studies or Community Based Environmental Protection projects. These were funded wholly or in part with federal monies, and the majority of the sampling and analyses were performed by EPA Region 4 staff or a contractor.

Beginning in 2000 air toxics monitoring has gained increased prominence on a national scale. In the *Draft Air Toxics Monitoring Concept Paper*, published on February 29, 2000, EPA developed a comprehensive three year plan to implement long-term air toxics trends monitoring. This plan included the establishment of ten short term "Pilot" cities monitoring projects (one in each EPA Region) in order to gauge ambient air toxics concentrations as well as the logistics of operating a long term network. As a culmination of this effort, the first 13 long-term air toxics monitoring sites will be established in FY2003.

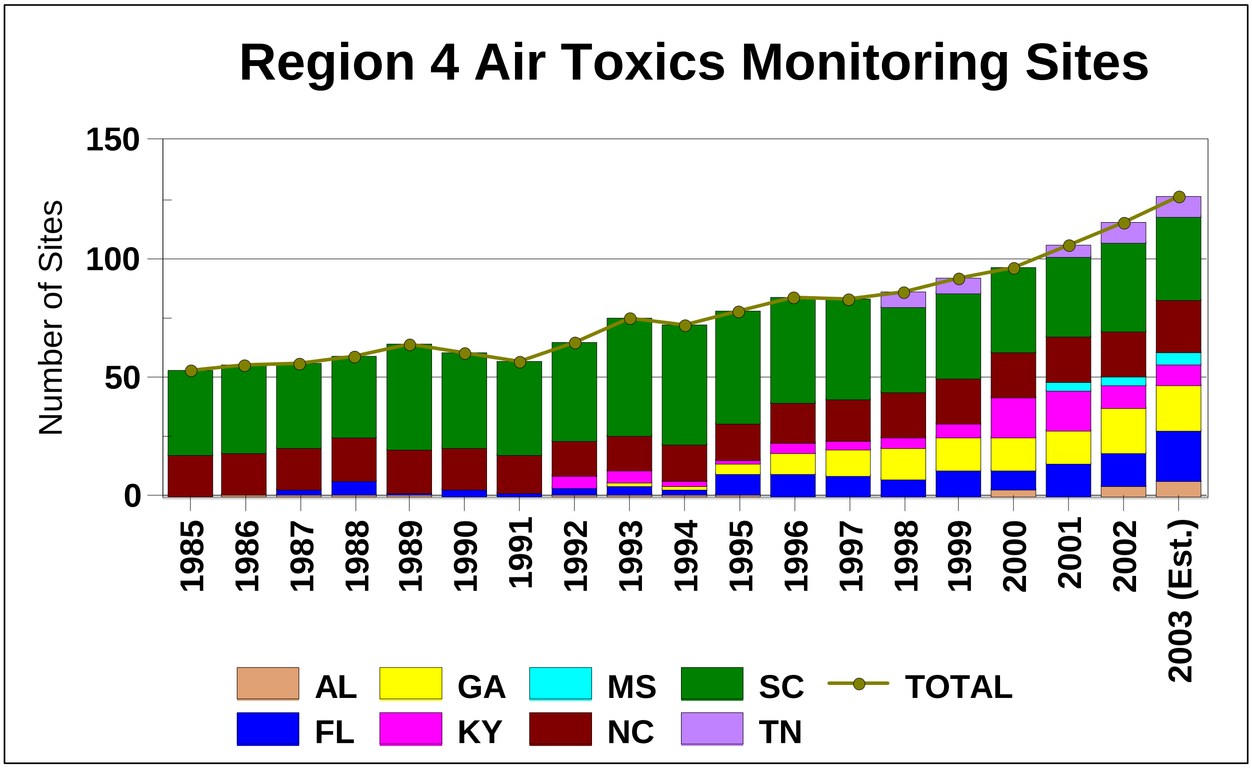


Figure 6.1 Region 4 Air Toxics Monitoring Sites 1985 - 2003 (estimated).

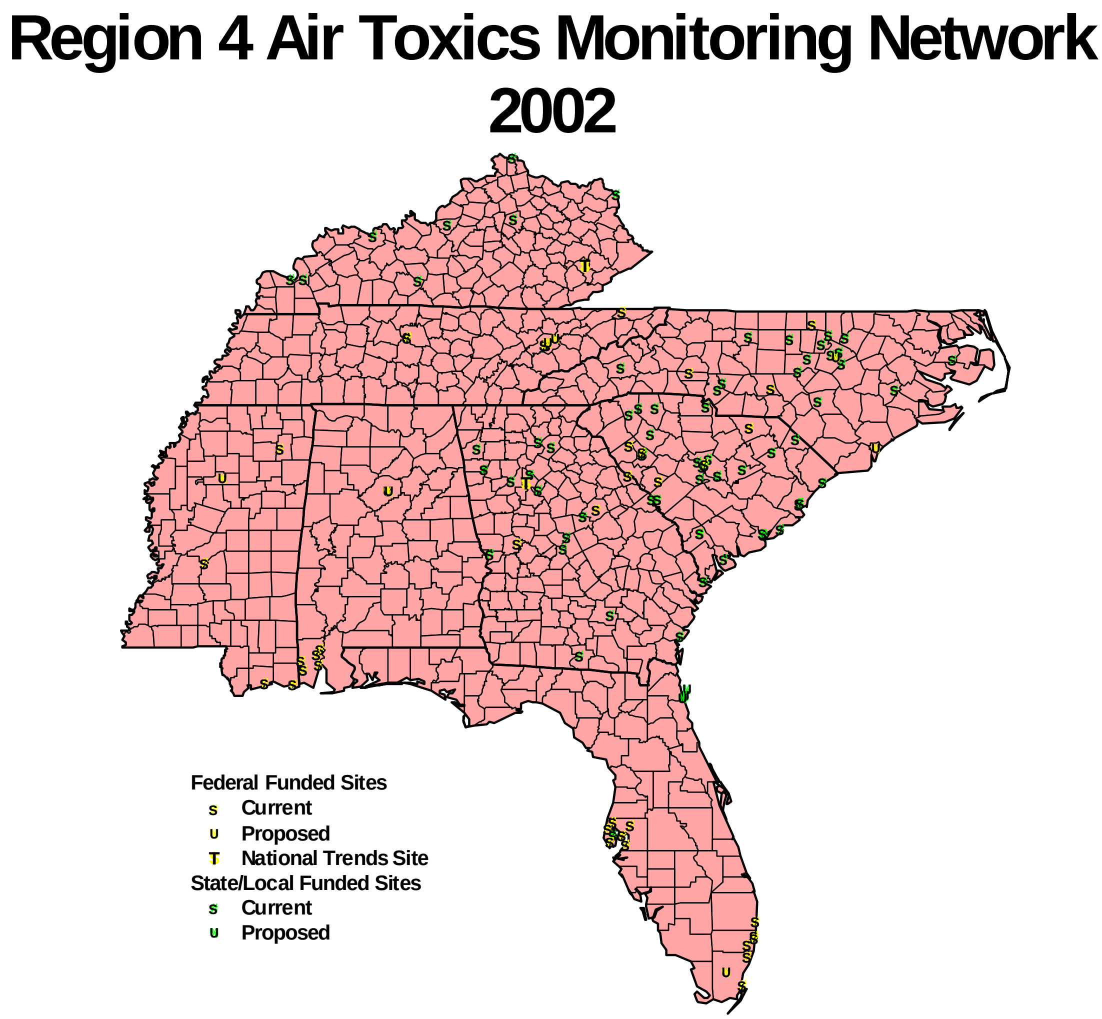


Figure 6.2 2002 Region 4 Air Toxics Monitoring Locations.

Region 4 agencies have been active in this process; the Tampa, Florida area (Hillsborough and Pinellas Counties) were part of the Pilot Cities monitoring project and were the first in the nation to begin monitoring for the Pilot program. Both Georgia and Kentucky will operate long-term trends sites beginning in 2003. Region 4 serves on the Steering Committee for the National Air Toxics Monitoring Program which is responsible for implementing the Pilot Study and the National Air Toxics Trends Stations.

The activities leading up to the establishment of a national long-term air toxics monitoring network also meant that more federal funds were available for air toxics activities. Since 2000, approximately $3 million in federal money has been available nationally each year for air toxics monitoring as part of the National Air Toxics Monitoring Program. From 2000 - 2002, Region 4 has also awarded approximately $1.2 million for air toxics monitoring projects. With an increased amount of federal funding available, the number of monitoring sites in Region 4 has increased 31% in less than three years, from 96 monitors in 2000 to an estimated 126 monitors in 2003. The increase in federal monies has also meant an increase in participation; of the 24 state and local agencies in Region 4, eight have begun air toxics monitoring since 2000, and all received federal funding specifically earmarked for air toxics monitoring. Five of these agencies are exclusively using the EPA national contractor for laboratory analysis and data upload into the Air Quality Subsystem. Figure 6.2 shows the current air toxics monitoring locations in Region 4, broken out by the primary funding source.

As discussed, current Region 4 air toxics initiatives build upon a long history of air toxics monitoring experience. It is the goal of Region 4 to continue to enhance air toxics monitoring activities in order to address health concerns and residual risk as required in Section 112(f) of the Clean Air Act.

In order to continue to maintain and expand air toxics monitoring activities in Region 4 and to properly assess air quality issues, Region 4 has implemented a Regional Air Toxics Monitoring Workgroup which is composed of state and local managers as well as EPA staff who can make decisions and be instrumental in program development and air toxics assessments. The Workgroup will develop a Regional Air Toxics Monitoring Strategy to respond to air toxics data needs. From this Strategy, monitoring needs for the Region can be identified and data to support air toxics trends and risk potential can be adequately addressed.

B. Workgroup Goals

1. Develop a Regional Air Toxics Monitoring Strategy
2. Establish a unified 25 state/local/tribal air toxics monitoring network
3. Identify milestones and targets
4. Define mechanisms for data interpretation
5 Enhance monitoring capabilities for state, locals and tribes
6.. Ensure that the air toxics network/plans meets the criteria established for the National Air Toxics Monitoring Program/National Air Toxics Trends Stations
7. Support new and innovative monitoring technologies
8. Ensures consistency and quality in air toxics monitoring, methodologies and data interpretation.
9. Ensure quality air toxics data are entered in the Air Quality System (AQS) data base
10. Actively seek funding sources to support the monitoring strategies
11. Support special air toxics monitoring projects
12. Possible implementation of Homeland Security monitoring preparedness
13. Address monitoring issues associated with atmospheric deposition, e.g., Total Maximum Daily Loading, mercury
14. Ensure that adequate training is provided

15. Identify funding needs
16. Instrumental in conducting a Regional Air Toxics Monitoring Workshop

C. Region 4 EPA Responsibilities

1. Leads the Regional Air Toxics Monitoring Workgroup
2. Participates in national and regional air toxics monitoring activities.
3. Host annual Air Toxics Monitoring Workshop
4. Serves as liaison for EPA headquarters, states, local and tribes
5. Approves quality control/quality assurance procedures, e.g., lab inter-comparisons, Quality Assurance Project Plans
6. Coordinates federal funds
7. Assist in the development of the Regional Air Toxics Monitoring Strategy
8 Coordinate National Air Toxics Monitoring Program, Urban Air Toxics Monitoring Programs and others
9 Introduce new technologies, e.g., auto-gas chromatography, Open path (Differential Optical Absorption Spectrometer)
10. Provide over site and technical assistance for S/L/T
11. Work with other agencies to support air toxics activities, e.g., Department of Defense, Homeland Security, etc
12. Support specialized air toxics monitoring studies

D. State , Local and Tribes responsibilities

1. S/L/Ts are expected to define implementation mechanisms, support regional/national priorities, identify potential risk and support regional workgroup recommendations
2. Maximize resources in current criteria network to implement air toxics network.
3. Implement Quality assurance/quality control, based on Regional/national protocol
4. Identify funding needs for program implementation
5. Ensure that staff are properly trained in program implementation
6. Conduct special projects to address localized/source air toxics concerns
7. Work with EPA in the implementation of atmospheric deposition studies
8. Ensure that quality data is entered into the AQS data base

E. Training

Region 4 will support training for S/L/T and the Regional staff in order that quality, efficient mechanisms are implemented that ensure resources are maximized and quality data are available to customers. The Region will support the participation of all S/L/T in the following activities.

1. Annual Air Toxics Monitoring Workshop
2. Quality Assurance/Quality Control

3. Monitor Siting guidance
4. New and innovative technologies
5. Sample and data analysis, AQS data input
6. Sampling technology/techniques
7. Provide guidance and assistance as requested
8. Understanding atmospheric deposition

F. Deficiencies

In order to accomplish the goals of Region 4, a number of deficiencies have been identified which must be addressed. Despite these deficiencies, Region 4 will continue to take a pro-active approach to address the need for air toxics data to support risk assessments and the protection of human health.

1. **Data interpretation/accountability and entering data into the AQS data base**

2. Limited national guidance

3. Training for the development of air toxics networks that follow national consistency

4. Lack of technology and methods development

5. **Lack of adequate funding to support data needs**. The major issue in air toxics monitoring is inadequate funding. Of the 25 state and local and tribal agencies in Region 4, 14 lack adequate resources such as laboratory, personnel, and financial resources to operate an independent air toxics monitoring network Cooperative efforts with agencies that have the necessary resources have been productive.

"As the monitoring organizations toxics networks and analytical capability are developed and mature, the availability of funding through periodic 'competitive' grants becomes less desirable. I am reluctant to apply one time or non-recurring funds to the vital personnel needs necessary to operate the complex sampling and analysis required for toxics monitoring. A mechanism must be developed to provide the additional stable funding needed to support this significant effort."

While the cost savings realized by terminating criteria monitors, as recommended by this Air Monitoring Network Assessment could be applied to air toxics monitoring, these cost-saving techniques would not likely to be enough to support the needs for air toxic data in Region 4. A national funding effort on par with the support given to $PM_{2.5}$ monitoring is likely needed to sustain long term air toxics monitoring in Region 4.

VII. RESULTS

A historical review of the monitoring networks in Region 4 over the past 15 years showed a general trend downward with regard to overall network size. When this historical analysis examined the monitoring networks by parameter as well, it became apparent that significant reductions in individual parameters coincided with regulation changes and policy statements issued by EPA. These reductions were most obvious for the TSP, PM_{10}, and Pb parameters. Most parameters for most Region 4 agencies, not just TSP, PM_{10}, and Pb, demonstrated a appreciable network reduction following the 1997 Hunt Memorandum regarding Ambient Monitoring Re-engineering. The TSP, PM_{10}, and Pb networks are prime examples of this process.

As part of this Network Assessment, Region 4 offered to our state and local agencies an initial proposed list of 345 monitors (67% of the total CO, Pb, NO_2, PM_{10}, and SO_2 Region 4 network) that could be terminated. The state and local agencies agreed to terminate 74 monitors (14.5% of the total CO, Pb, NO_2, PM_{10}, and SO_2 network) from those proposed by Region 4. The breakdown of these 74 are as follows: 16 CO, 4 NO_2, 5 Pb, 43 PM_{10} and 6 SO_2. These terminations have already been completed or are planned to take place by December 31, 2002. The initial monitoring reductions from this assessment were primarily at monitoring stations which contained either only one or two parameters. Current regulations or the application of the criteria contained in the 1997 Hunt Memorandum regarding Ambient Monitoring Re-engineering to O_3 or $PM_{2.5}$ did not reveal clear candidates for termination. Therefore, other analyses were used to examine the O_3 and $PM_{2.5}$ networks for potential optimization and reduction, namely spatial analyses.

Spatial analysis of O_3 and $PM_{2.5}$ design values show Region 4 to have broad scale violations for the 8-Hr O_3 and annual $PM_{2.5}$ NAAQS. The rural sites were found to be typically low concentration and low variability sites which from a strictly regulatory viewpoint are “low value”. Spatial techniques, however, revealed the importance of rural monitoring sites to accurately mapping this type of information. Many of these rural monitoring sites which were found to be critical to conducting accurate spatial analyses from Region 4's Network Assessment were found by the National Assessment to be low value sites that contribute minimal interpolated bias from their removal from the monitoring network. A sensitivity analysis of the spatial data pointed to potential reductions in those ozone monitoring networks which were clustered in urban areas. Further analysis of these areas and networks found that these networks were driven by local research concerns (Atlanta - Ga Tech) or limited resources coupled with desire to estimate ozone boundary extent (Birmingham, AL).

It was also found through the data review for this network assessment that Region 4 now has the largest Regional population based on the 2000 Census. Even so, the EPA Trends Report and Factbook’s MSA and County Level summary statistics show other regions as having larger populations exposed to NAAQS violations for 8-Hr O_3 and $PM_{2.5}$. When spatial analysis techniques where employed to estimate the population exposed to violations of the 8-Hr O_3 and $PM_{2.5}$ NAAQS, Region 4 was found to have the largest population (99-01 data) exposed to violations. Also, spatial analysis calculations applied to those areas which had combined 8-Hr O_3 and $PM_{2.5}$ violations showed Region 4 to be significantly greater than other regions for populations exposed to both these pollutants. There is significant discrepancy between the population exposure results produced from spatial analysis techniques compared to the population exposure results produced from methods currently utilized in the EPA Trends Report and Factbook.

An evaluation of current Region 4 ozone monitoring seasons, using the most recent 6 years of data (1996-2001), identified months during which states are likely to report ozone concentrations approaching the level of an 8-hour exceedances. Based on the conservative criteria presented in 1998 EPA guidance, these months are considered candidates for inclusion in a revised ozone season. The current Region 4 ozone monitoring season is April-October for North Carolina and South Carolina, and March-October for all remaining states. With the exception of Florida, the remaining Region 4 states recorded a combined total of only seven hits (values $\geq$ 0.080 ppm) during March. All states reported multiple hits during April and October. These data suggest that monitoring March through November will document additional hits, while lengthening the season to include February is unlikely to document additional hits. The data for Kentucky and Florida support deviations from this March-November season; Kentucky reported no hits during March 1 - April 15, 1996-2001, while Florida reported several hits in February.

An evaluation of the current seasons was also done using this same database and additional, less conservative criteria developed by Region 4. The database was evaluated to determine if the data reported by states during the current ozone season boundary months are needed to ensure accurate regulatory decisions regarding 8-hour NAAQS attainment status, 1-hour NAAQS attainment status, or accurate reporting of the AQI as required by 40 CFR Part 58.50.

The exceedences (values $\geq$ 0.085 ppm) reported by states during the current boundary months of March, April and October were quantified and characterized. With the exception of Florida, Region 4 states recorded a combined total of only 27 March-April-October exceedences during the 1996-2001 review period. Three of these occurred between March 1 and April 15 and seven occurred during the second half of October. Florida recorded numerous hits and exceedences throughout March and October. None of the exceedences recorded by Kentucky and Tennessee during March, April or October, 1996-2001, ranked among the four highest values for a given monitor-year. This data suggests that Kentucky and Tennessee are highly unlikely to record ozone concentrations during these months that affect 8-hour NAAQS attainment determinations. During the same three months, Alabama, Georgia, Mississippi, North Carolina, and South Carolina recorded 12 exceedences in eight different areas that ranked among the four highest values for a given monitor-year. Since the exclusion of these values has the potential to impact 4^{th} maximum values, further evaluation was done to determine their actual impact on 8-

hour NAAQS attainment determinations.

The exclusion of 1996-2001 March exceedences had no impact on the calculation of design values. The exclusion of April and October exceedences resulted in downward revision of five design values by 0.001-0.002 ppm. In no case, did the revision of a design value due to the exclusion of a March-April-October exceedances alter the 8-hour attainment status of an area.

The number of 1-hour hits (values $\geq$ 0.120 ppm) reported by states during 1996-2001 was quantified and characterized to determine which months of monitoring data have the potential to impact the Region's ability to make accurate regulatory determinations regarding 1-hour NAAQS attainment status. With the exception of Florida, all Region 4 states only recorded 1-hour ozone hits during May through September. Florida recorded two hits and one exceedance (0.0127 ppm) in late October.

A preliminary determination of AQI values for Region 4 shows that either ozone or $PM_{2.5}$ may be the controlling pollutant for any given day during the current ozone season boundary months of March, April and October. A final determination was not done due to discrepancies that exist in computations for the AQS Air Quality Summary Report (AMP410S).

VIII. CONCLUSIONS

Most monitoring reductions in the Region 4 CO, Pb, NO_2, PM_{10}, and SO_2 networks were found to be a result of regulatory or policy changes by EPA. Because of this, Region 4 expects additional reductions, from those already achieved through this assessment, after regulatory changes are published sometime next year. Further reductions in these monitoring networks without this regulatory support will be limited because most of the remaining networks are already optimized (most remaining monitors are sited at stations where multiple parameters reside). Throughout the assessment process, attention was given to ensuring that current uses of the data from the O_3 and $PM_{2.5}$ networks (SIP, AQI, AIRNow, spatial analysis) were not adversely impacted by network reductions or modifications. No reductions in the O_3 and $PM_{2.5}$ networks were found as a result of this review and very limited O_3 and $PM_{2.5}$ network reductions are expected to result from regulatory rule changes and the post designation process. Due to current regulatory requirements which emphasize the importance of monitoring for the purpose of demonstrating compliance with the NAAQS, current O_3 and $PM_{2.5}$ networks are typically focused into high population areas such as urban areas, and non-attainment and maintenance areas. This focusing of the networks toward high population areas has caused less emphasis being placed on rural monitoring. Rural monitoring has been found by this assessment to be critical to performing accurate spatial analyses. If EPA wishes to support spatial analyses, as stated in memo "Use of Spatial Data Analyses" dated May 21, 2002, as a means to examine and investigate data from our ambient air monitoring networks, more O_3 and $PM_{2.5}$ monitoring will be needed in Region 4. This additional monitoring will need support from revised regulations and guideline documents in order to emphasize rural monitoring as a priority for EPA in its pursuit of spatial analyses.

In addition to demonstrating the need for additional monitoring in rural areas to improve spatial interpolation of ozone exposure, this analysis shows a fundamental flaw in some of EPA's reporting of population exposure to violations of the O_3 and $PM_{2.5}$ NAAQS. EPA has historically assumed that if any monitor in an MSA or county was experiencing a violation, then anyone in that area is experiencing exposure to levels above the standard. This is a conservative assumption, designed in part to account for the inability to know for certain the ozone level at any given location, when only a limited number of ozone monitors are deployed. Spatial analysis techniques for interpolating data offer a way to overcome this problem of limited monitors, particularly in areas which now have a reasonably dense network of monitors. In several of the cases cited in Section IV (D) of this assessment (San Diego, Phoenix, parts of Los Angles), the interpolation of the O_3 data (and the 8-Hr O_3 standard itself) strongly argues that significant portions of many MSAs are not experiencing exposure to O_3 concentrations above the level of the 8-Hr O_3 NAAQS. Conversely, other areas such as Region 4, may be experiencing O_3 exposures above the level of the NAAQS greater than is currently being assumed. From the work performed in this assessment, the southeast was found to have the most number of people being exposed to violations of the O_3 and $PM_{2.5}$ NAAQS, and was typically biased low when compared to current EPA methods of representing exposed populations by about 10 million people. However, the interpolation for the Region 4 area provides weaker evidence than some other areas of the nation because the documentation of the actual ozone levels though direct monitoring is more sparse. Region 4 needs more ozone monitors to refine spatial analyses. The number and placement of these additional monitors will depend on how well EPA wants to be able to define these spatial data. If EPA Region 4 were to reduce the number of O_3 or $PM_{2.5}$ monitors in its ambient networks, as EPA wishes to do nationally by 5% to 25% from their current level, this bias between spatial analysis techniques and current EPA methods in expressing populations exposed to violations would be exacerbated.

Assessment of the current Region 4 ozone season based on EPA guidance suggests that a longer March-November season is needed for most Region 4 states. Florida must also monitor in February, while Kentucky need not monitor in April. This revision would require monitoring during months for which states are likely to report maximum concentrations that only approach the 8-hour NAAQS exceedances level (i.e. 0.080-0.085 ppm).

These ozone season revisions, based on the current guideline document, may be overly conservative for purposes of achieving ozone monitoring goals, since the data collected during March, April and October, 1996-2001, did not impact the attainment status of any Region 4 areas for the 8-hour or 1-hour NAAQS during this 6-year period. Some of these 8-hour exceedences reported for Alabama, Georgia, Mississippi, North Carolina and South Carolina during these months ranked among the four highest values for a given monitor-year, suggesting that March-April-October ozone data has the potential to impact regulatory decision making. However, the occurrence of high-ranking ozone concentrations for these months is also limited to eight areas. Florida was the only Region 4 state reporting 1-hour concentrations $\geq$0.120 ppm outside of the May-September period. A preliminary assessment of Region 4 AQI values for 1996-2001 shows that ozone is sometimes the controlling pollutant during March, April and October. However, the AQI is reported only for MSAs with populations >350,000. Thus, both regulatory and AQI objectives could be achieved by operating a subset of the full state ozone networks during March, April and October.

An alternative to full network operation for the entire length of the ozone monitoring season is a hybrid ozone season that includes a core season of full network operation and a year-round operation season of a small subset of carefully-selected monitors. The results of Region 4's analysis demonstrate that for most Region 4 states, the full state ozone network must be operated May-September to achieve primary ozone monitoring goals. Florida’s core season must also include March, April, and October to ensure the reporting of multiple hits and exceedences that typically occur during these months. Operating a small subset of monitors beyond the core ozone season achieves several additional ozone monitoring objectives. First, it allows for the March, April, and October operation of monitors in the critical areas identified for some states. Second, if properly-sited, these monitors can address the regulatory requirement to daily report the AQI for all MSAs with populations >350,000 (40 CFR Part 58.50). Third, it provides year-round data that can be used to: discern long-term trends; supplement the continuous, year-round data to be collected at NCore Level 2 sites; improve the quality of future ozone season evaluations; and contribute to modeling and research programs. Establishment of this hybrid season for all Region 4 states also achieves the EPA guidance-based goal of maintaining regional consistency to the maximum extent possible.

For most states, all the objectives of year-round ozone monitoring can be met by operating two ozone monitors per state or 10% of a state's full ozone network, whichever number is greater. For states with relatively smaller ozone networks, multiple critical monitoring areas, and/or multiple MSAs reporting the AQI, additional monitors may be needed to meet all year-round ozone monitoring objectives. The exact number of additional monitors should be determined on a state-by-state basis.

To further reduce the potential for not recording critical data, the core portion of the hybrid ozone season can be lengthened. 1996-2001 ozone data shows that Region 4 could have achieved all ozone monitoring goals without lengthening the core portion of the hybrid season beyond May-September (Florida excluded). However, if a one- or two-month longer core season had been implemented for this time period, the number of missed exceedences would also have been substantially less. The disadvantage of these alternative hybrid ozone seasons is the expenditure of greater resources in exchange for the collection of additional, mostly low-value data. In summary, a hybrid ozone monitoring season with a May-September core comes closest to achieving the streamlining goals presented in EPA's draft National Ambient Air Monitoring Strategy document (September 1, 2002).

IX. RECOMMENDATIONS

The greatest impediment encountered by EPA Region 4 in conducting this Regional Network Assessment was in obtaining useful raw and summary data from the new AQS. Some analyses were not attempted and others were simplified due to the arduous process required to obtain and reduce data from AQS into a meaningful data format. Some analyses had to rely on data from the old legacy mainframe because the new AQS does not maintain enough air monitoring data to adequately define meaningful trends. In some instances (e.g. AQI summary report) accurate data could not be retrieved from AQS. Also, AQS has indirectly impeded the Region 4 Network Assessment by increasing the amount of time required to perform other regional air monitoring oversight responsibilities which are routinely performed by Region 4 air monitoring staff. More emphasis by EPA needs to be directed towards correcting errors in current AQS summary reports and providing more support to EPA Regional Offices in the form of tools and training required to obtain data from the new AQS.

However, because EPA is currently working toward rewriting the ambient air monitoring regulations, and because AQS has just recently been implemented as the database for EPA's ambient air monitoring data, there exists an opportunity to craft summary reports, and access to the raw data, that will assist the EPA Regional Offices in implementing EPA's new monitoring regulations and future network assessments. EPA Region 4 attempted to gather data from AQS via standard AQS reports and through Oracle Discover, neither were found to be effective at this point in development. EPA should examine its National and Regional Assessments to determine which analyses were most useful in optimizing the air monitoring networks and design automated AQS reports which assist in these assessments. EPA Regional Offices need more input on the functionality and utility of AQS reports and access to the raw data so that EPA air monitoring goals can be effectively implemented.

The multi-parameter NCORE concept is a much needed revision to the design of the ambient air monitoring networks. In order to be effectively managed and implemented however, standard AQS reports should be developed to allow for EPA Regional Office to automatically examine and review the regional air monitoring networks with respect to multi-parameter siting. When EPA begins implementing the new air monitoring regulations, such as the transition to NCORE levels 1, 2, and 3, state agencies should submit a new monitoring plan to the EPA Regional Offices for review and implementation. EPA Regional Offices should have AQS authority on designating NCORE level 3 monitoring, much like the EPA OAQPS currently has on NAMS designations. EPA should not automatically convert in AQS all SLAMS monitors to NCORE level 3 and NAMS monitors to NCORE level 2; doing so will circumvent the progress made through the National and Regional Network Assessments. In addition, standardized AQS reports to determine where deficiencies exist in the required air monitoring networks should be developed. Implementation of new and revised ambient air monitoring regulations should not be done independently of AQS development. All required regulations, policy statements, and routine data access needs should have associated automated AQS reports that provide the data in a meaningful format to EPA Regional Office staff. Data analysis and SAS programming expertise that exist in EPA should not be wasted by being applied toward routine functions that AQS should be able to compute. Failure to effectively translate air monitoring regulations into automated AQS reports will impede the deployment and review of the new air monitoring networks, future network assessments, and data analyses, including spatial analyses.

EPA needs to use these network assessments and spatial analyses as an opportunity to address the monitoring disincentives that currently exist in our ambient air monitoring networks. These monitoring disincentives hinder EPAs ability to accurately document the total population being exposed to air pollution. Due to these monitoring disincentives, the population figures cited by EPA in the Trends Report and Factbook as the number of people living in violating areas are probably more reflective of the number of people who are living in areas that need control strategies implemented as opposed to the total number of people who are being exposed to the air pollution. These spatial analyses, if supported with additional regulations, guideline documents and proper AQS support, offer the opportunity for EPA to assist the scientific community in accurately addressing the extent of the air quality problems for O_3 and $PM_{2.5}$. The use of spatial analyses enable this to be done while still allowing the monitoring networks to be used for more traditional purposes by policy regulators. These spatial analyses offer a means to document the extent to which downwind populations are being exposed to air quality which is violating the NAAQS, while not punishing these same rural downwind communities with nonattainment determinations (as would happen if these areas had O_3 monitors sited within them). The EPA Trends Report and Factbook should begin using spatial analyses for estimating population exposure to violations of the O_3 and $PM_{2.5}$ NAAQS because current EPA methods do not effectively quantify exposed populations.

EPA’s current guidance on evaluating ozone seasons should be revised to facilitate the identification of ozone monitoring seasons that will achieve all primary ozone monitoring goals in a more cost-effective manner. Recommended additional criteria include:

1. Quantify the 8-hour exceedences reported during months that bound the ozone season and characterize their potential impact on associated design values.
2. Identify months for which 1-hour concentrations > 0.120 ppm were reported and ensure those months are included in the recommended monitoring season.
3. Identify areas for which AQI reporting is required, and ensure that the recommended monitoring season does not impact EPA’s ability to report the AQI for those areas.

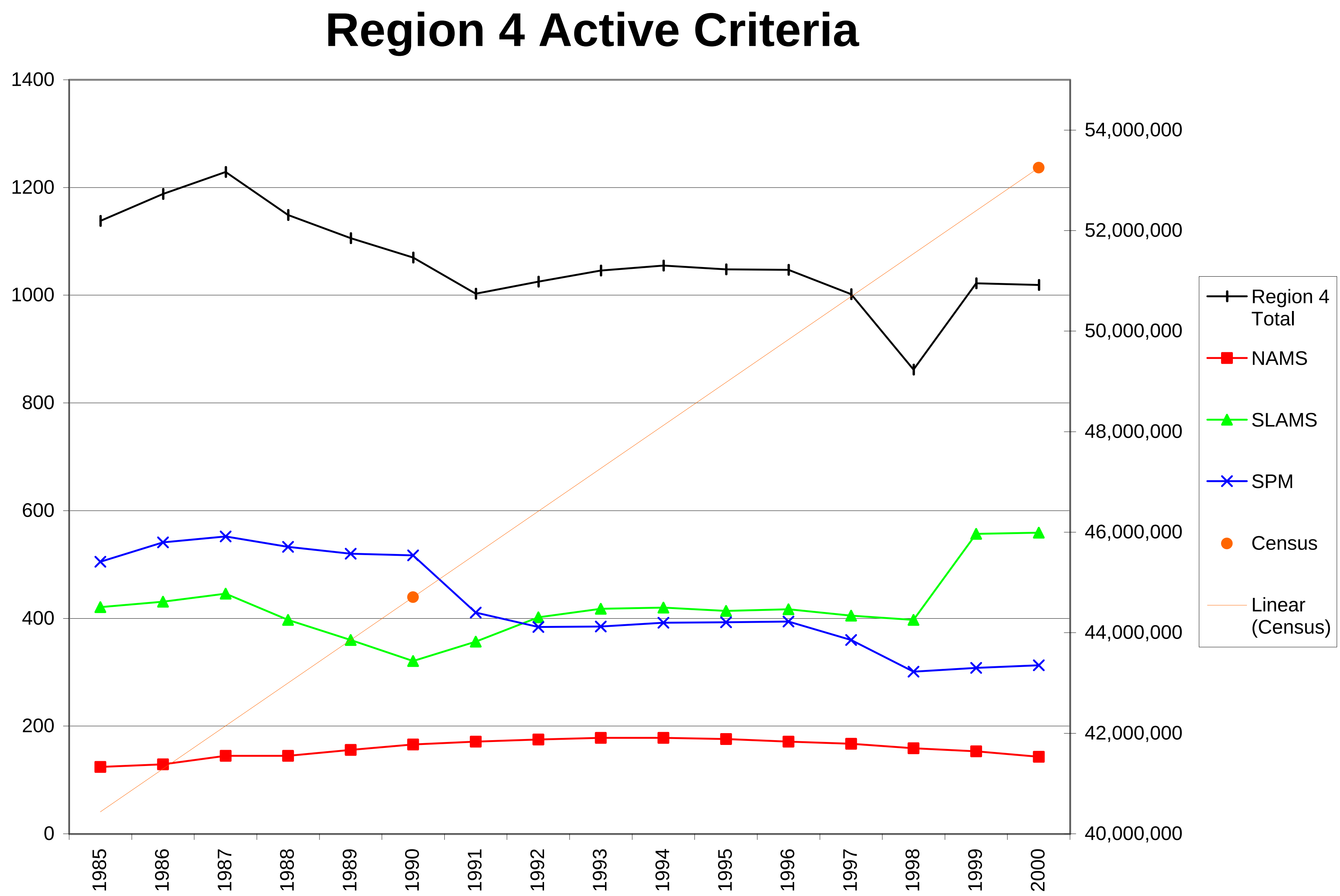
Use of these criteria should also provide additional data of use in meeting secondary monitoring goals and minimize the collection of low-value data. The key to effective implementation of the hybrid ozone season option is careful selection of the year-round monitoring sites. The selections should be made in partnership with state and local air monitoring agencies to ensure that the selected sites will achieve all monitoring objectives.

EPA Region 4 would welcome the opportunity to work with OAQPS in revising the existing guidance for selecting and modifying the ozone season and in revising and developing new guidance for network siting to meet the needs of spatial analyses.

Appendix A

Historical Examination of Network Revisions

Supporting documentation for Section III.



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1200
1000
800
600
400
200
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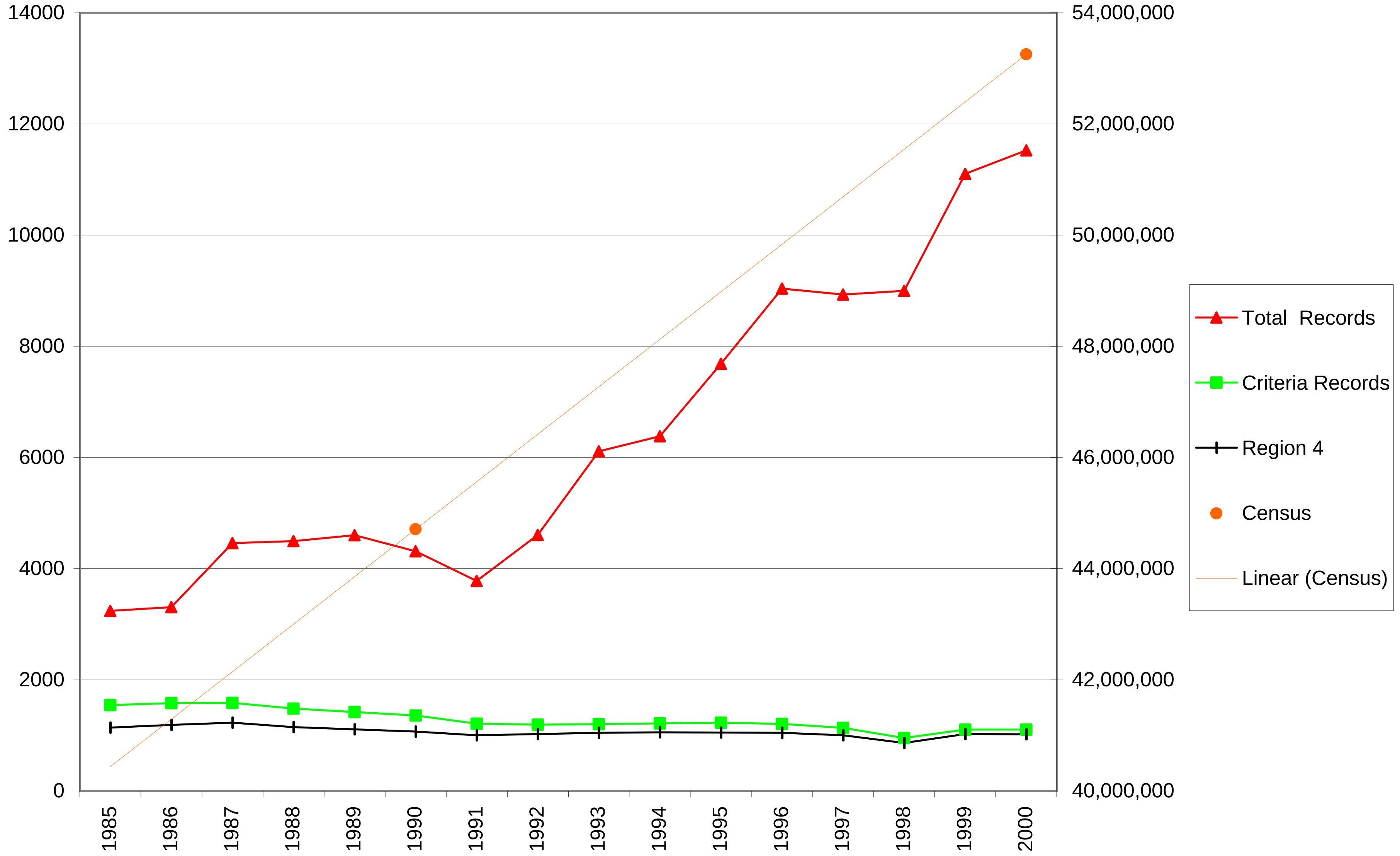
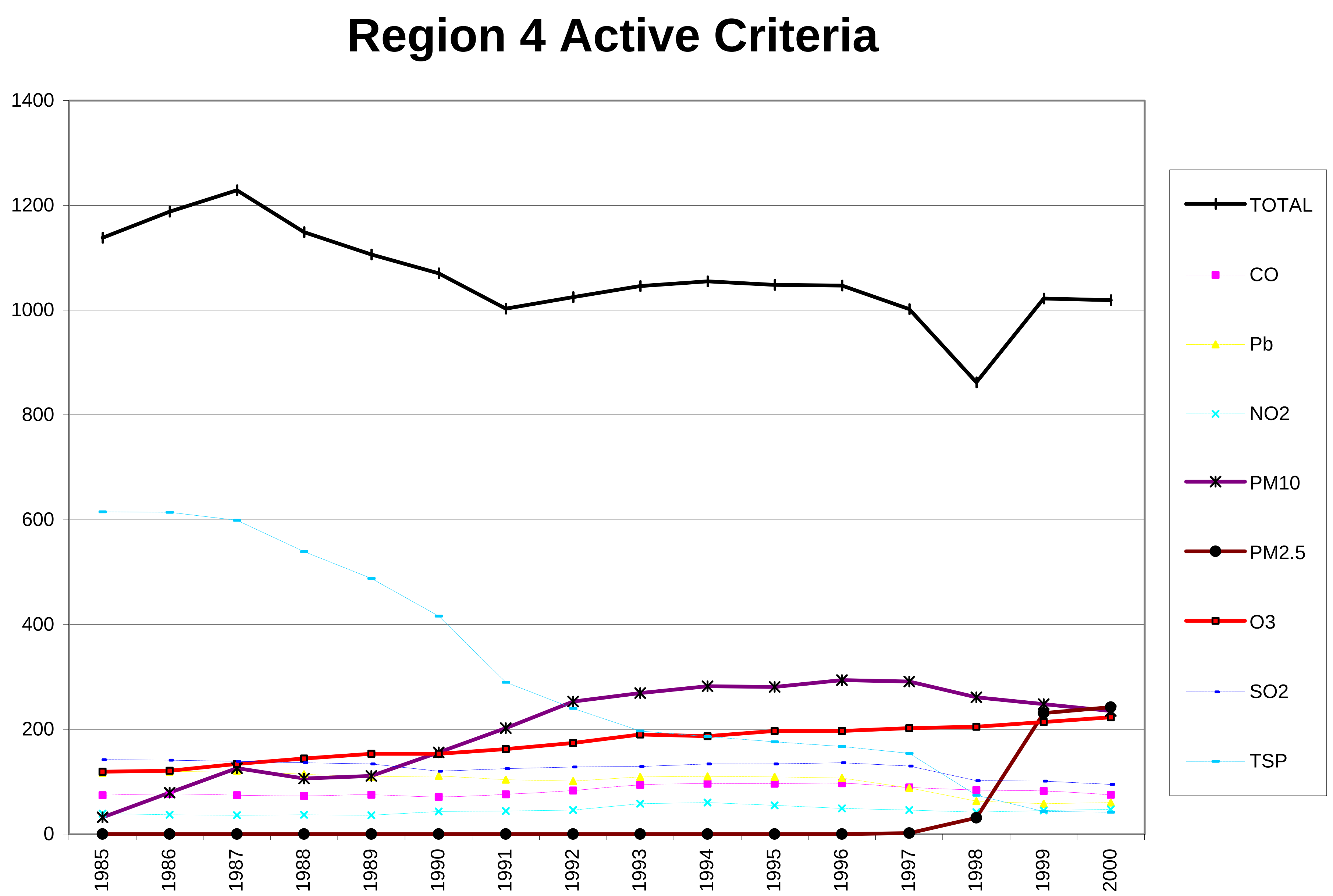
54,000,000
52,000,000
50,000,000
48,000,000
46,000,000
44,000,000
42,000,000
40,000,000
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
Region 4 Total
NAMS
SLAMS
SPM
Census
Linear (Census)

AIRS Site Records (Region 4)





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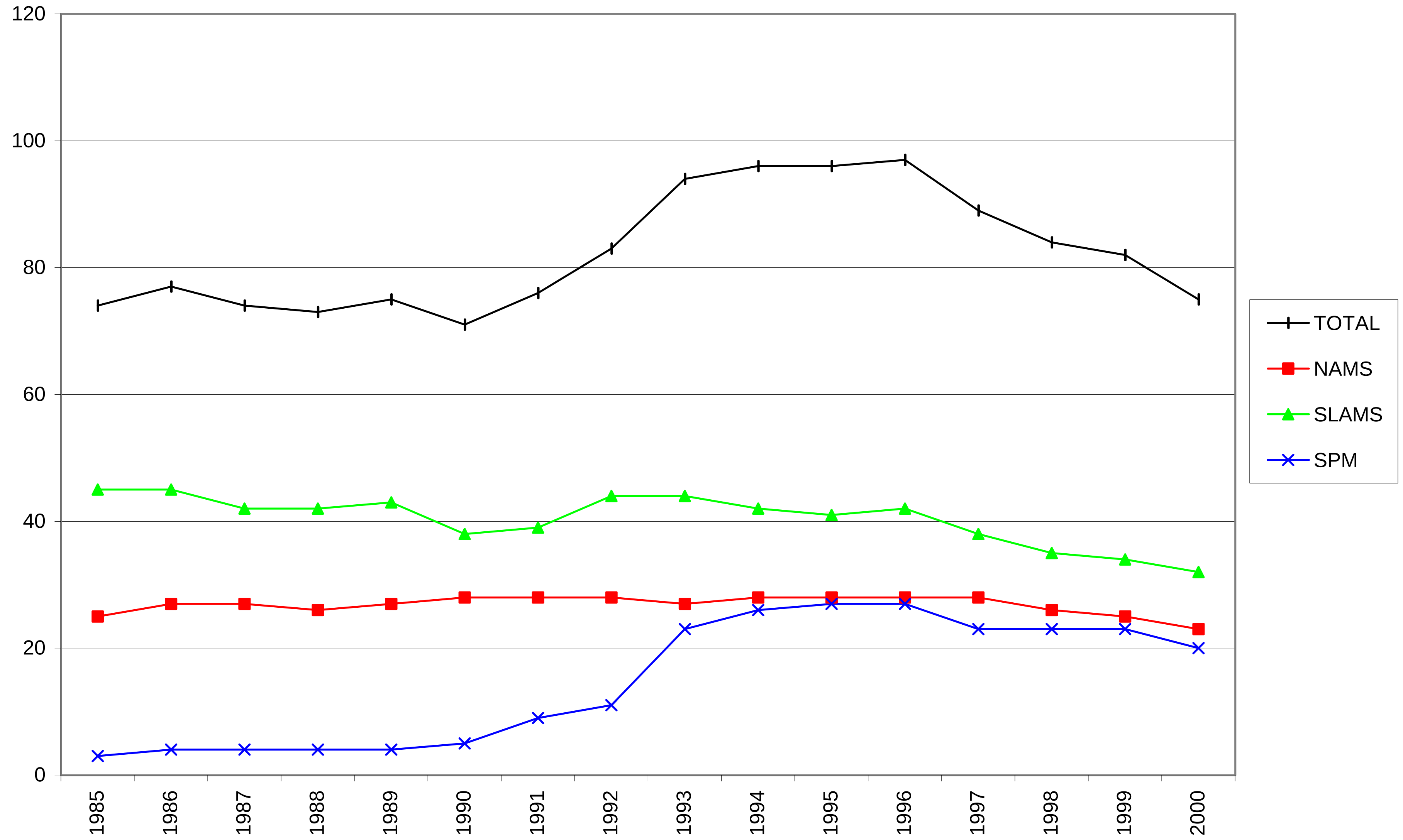
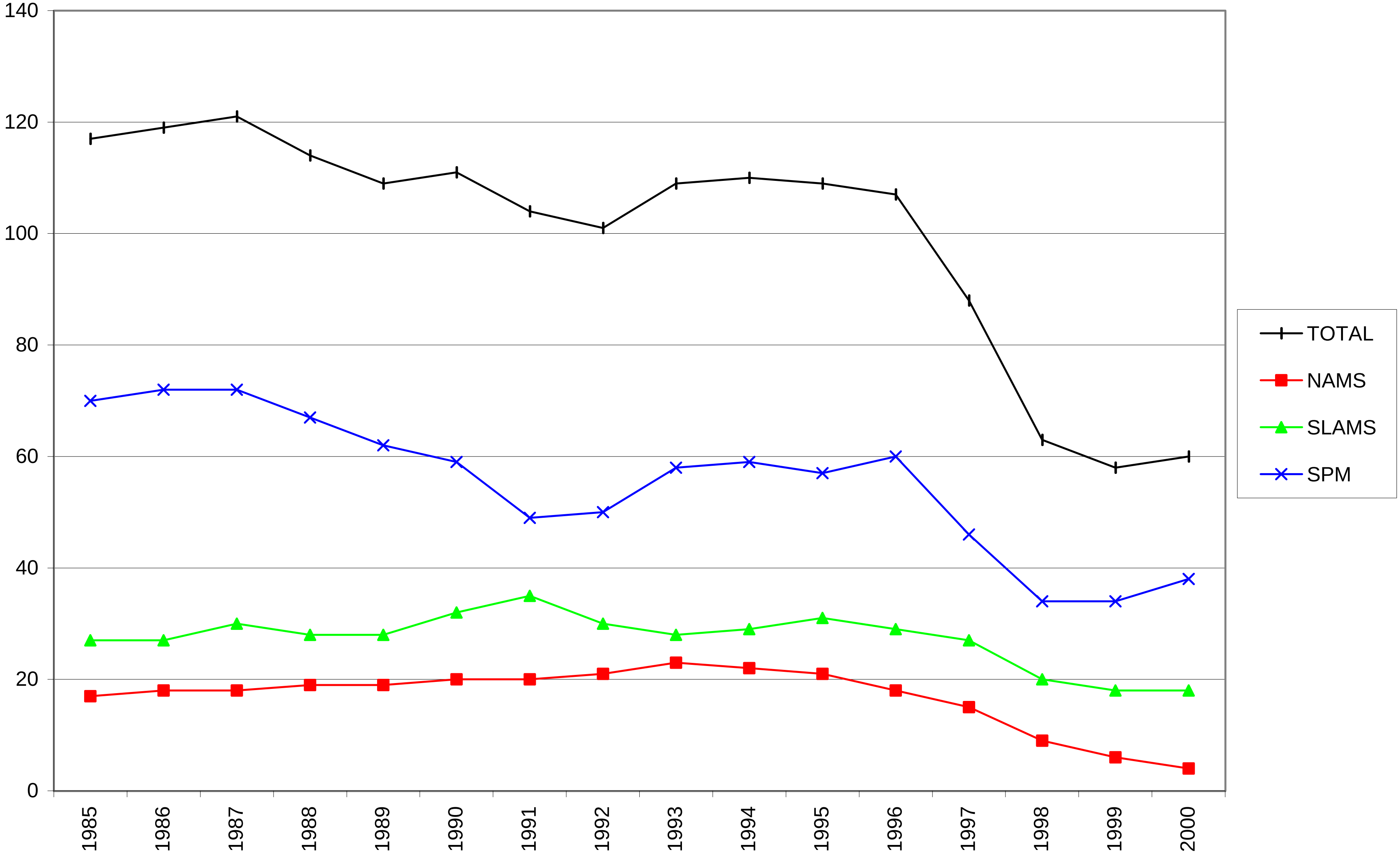
1400
1200
1000
800
600
400
200
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
CO
Pb
NO2
PM10
PM2.5
O3
SO2
TSP

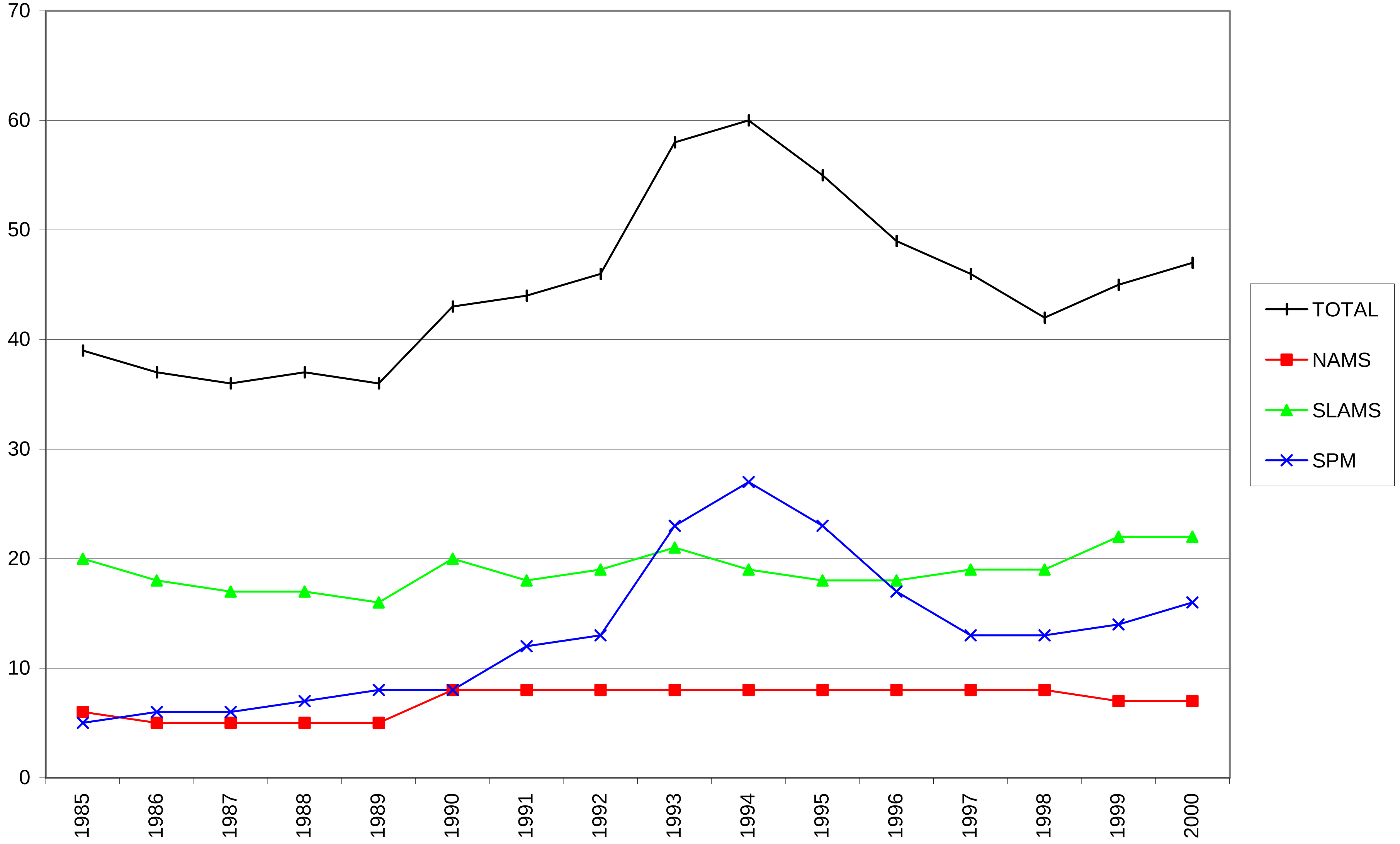
Region 4 Active CO



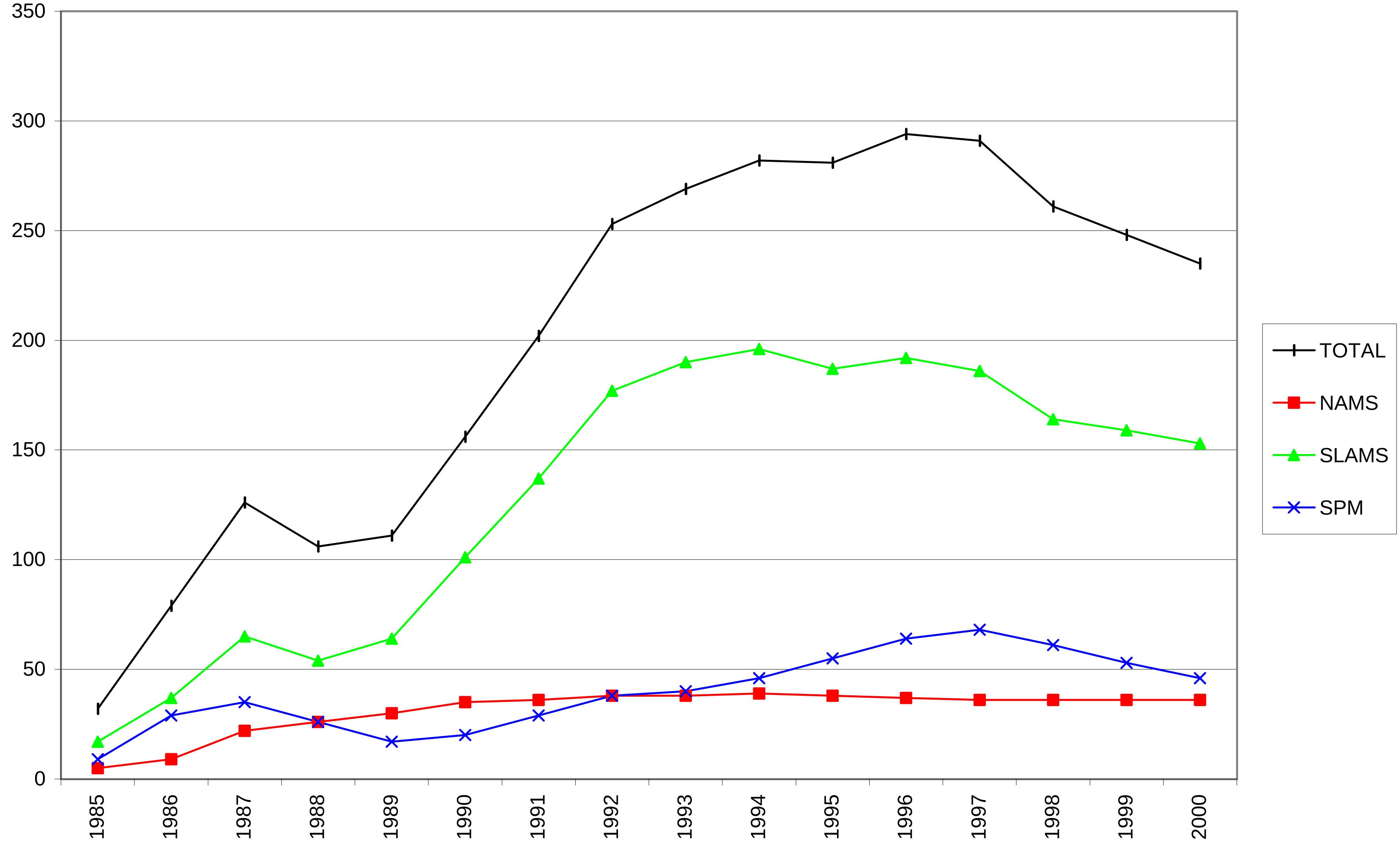
Region 4 Active Pb



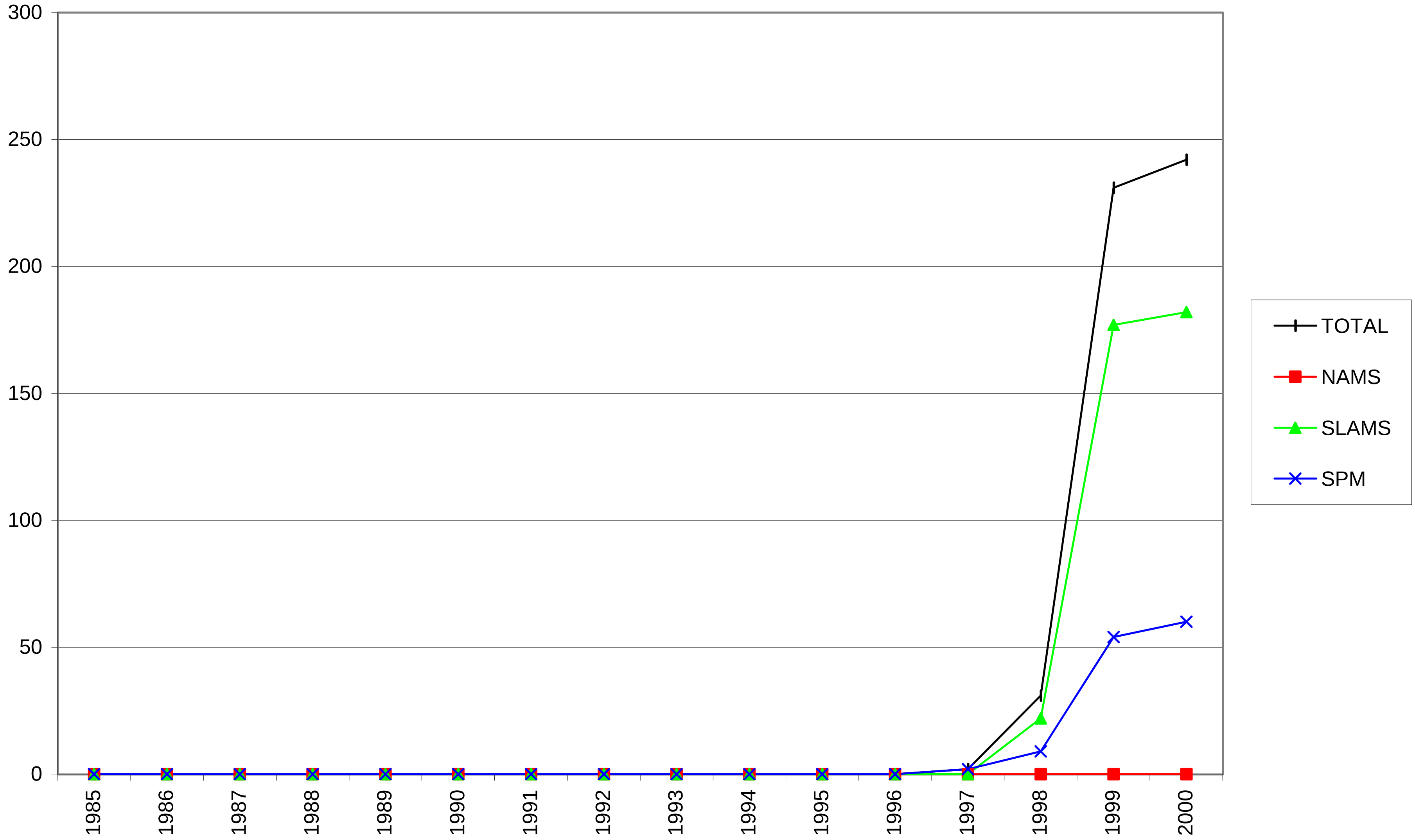
Region 4 Active NO_2



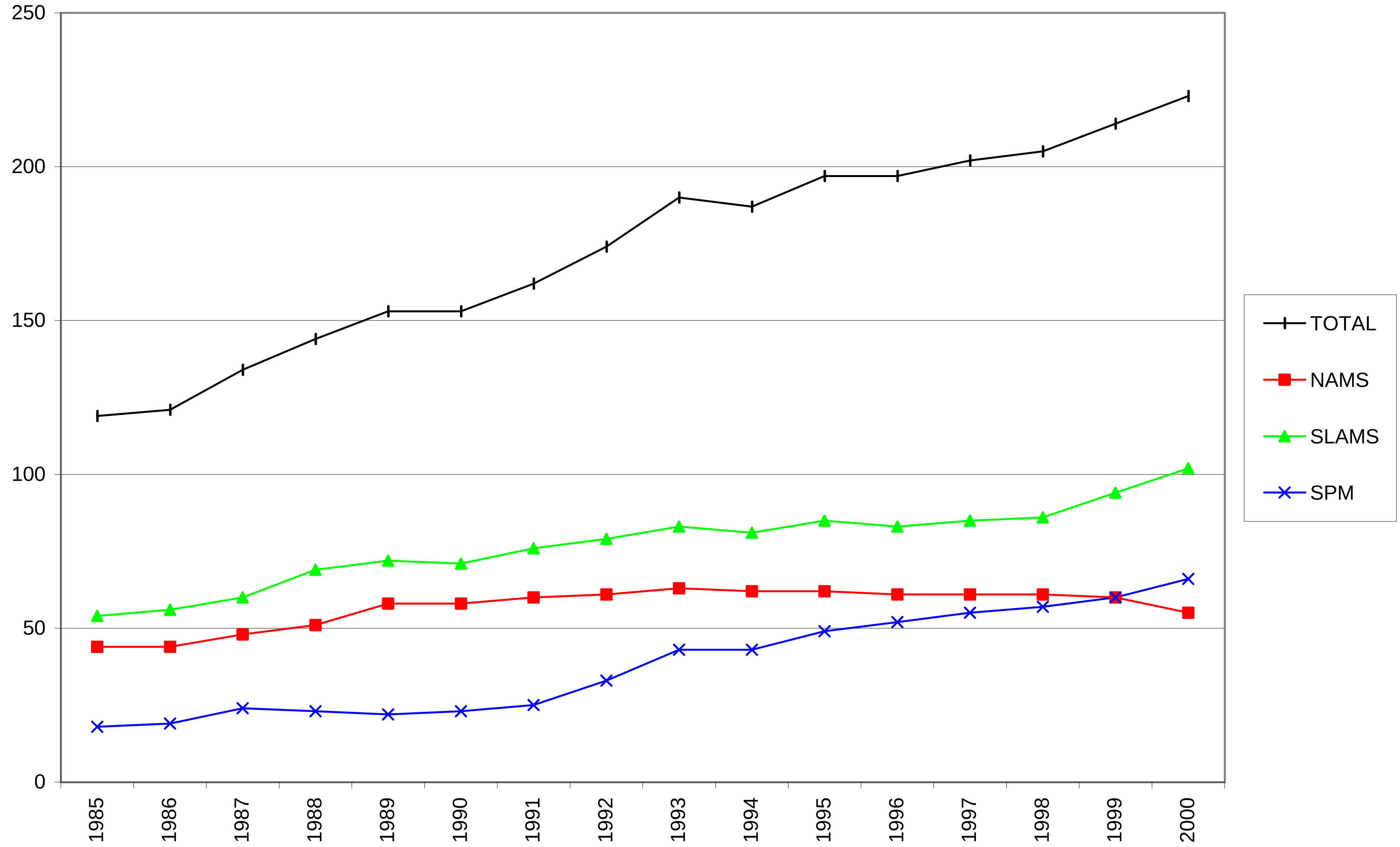
Region 4 Active PM_{10}

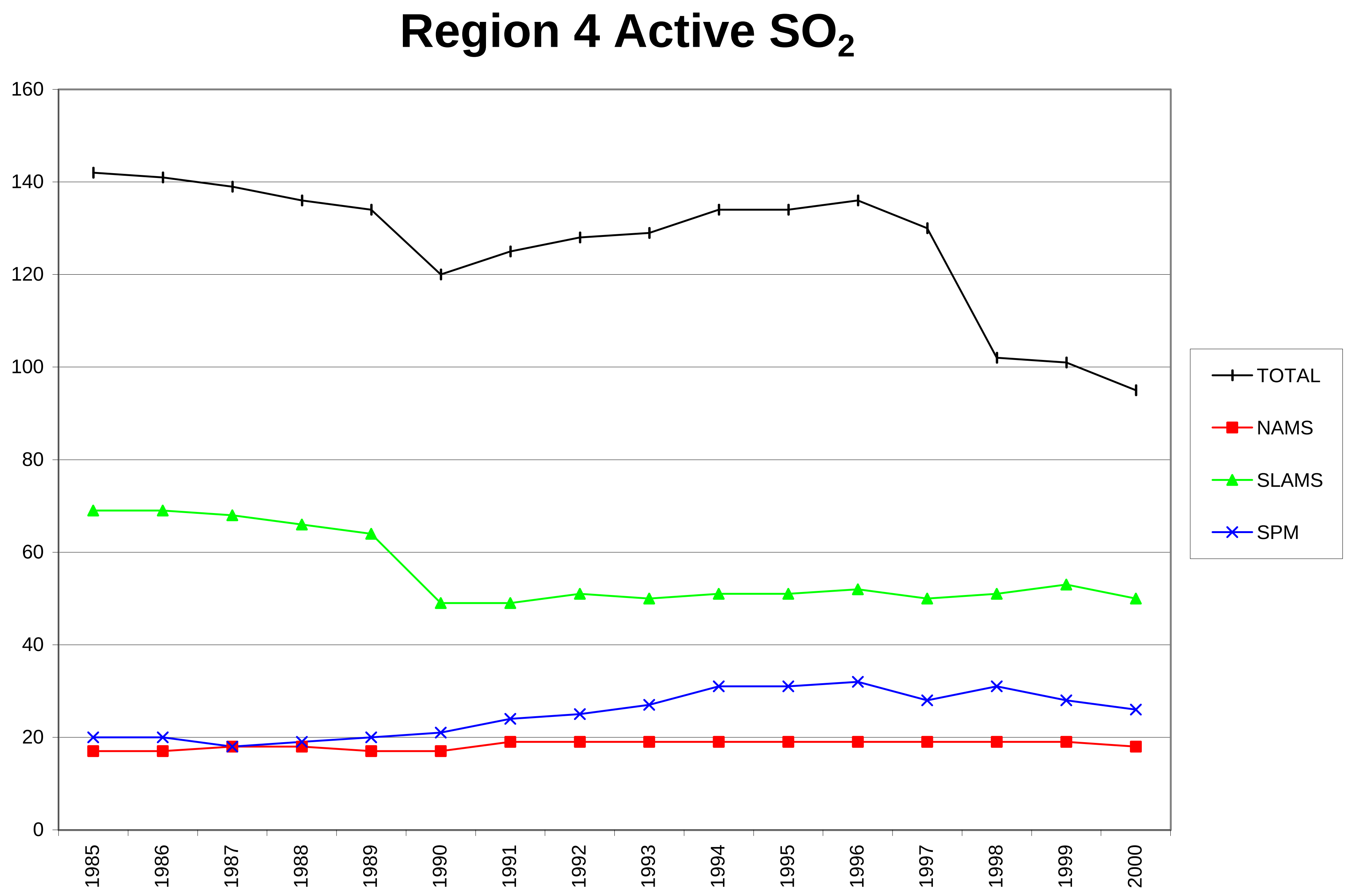


Region 4 Active $PM_{2.5}$



Region 4 Active O_3




Region 4 Active SO2
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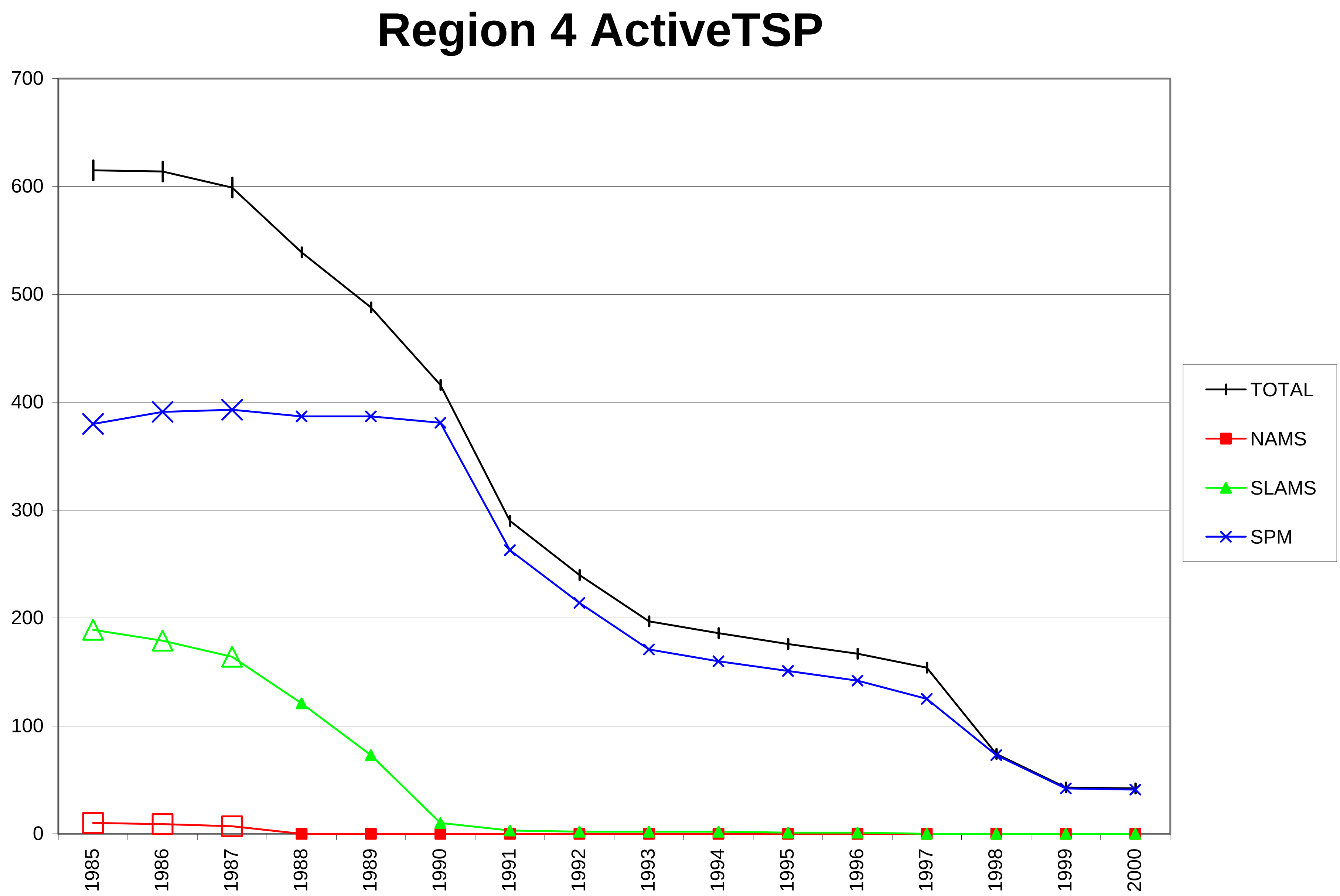
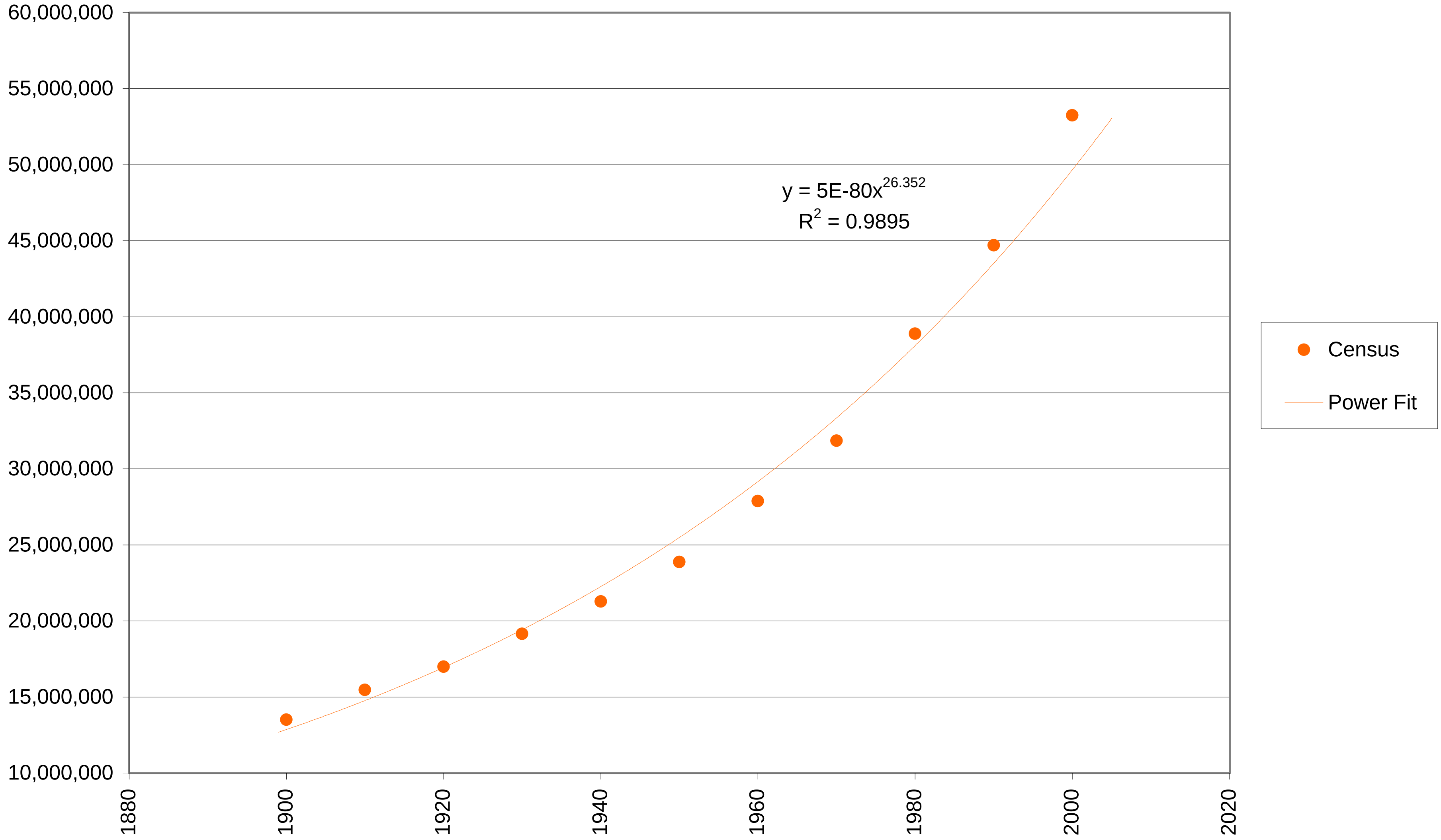
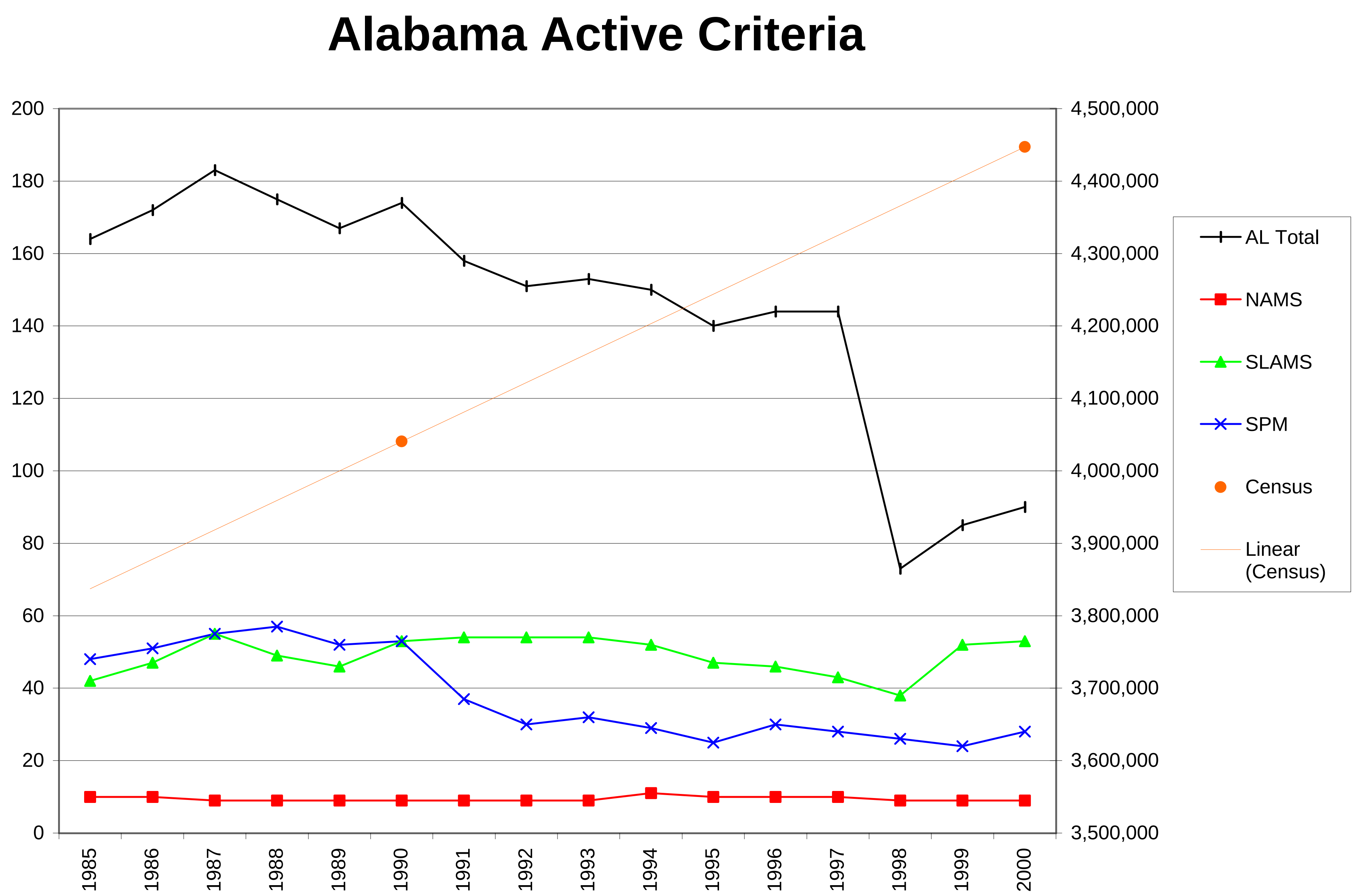
140
120
100
80
60
40
20
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM



Region 4 ActiveTSP
700
600
500
400
300
200
100
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

Region 4 Population Growth

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160
140
120
100
80
60
40
20
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4,100,000
4,000,000
3,900,000
3,800,000
3,700,000
3,600,000
3,500,000
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
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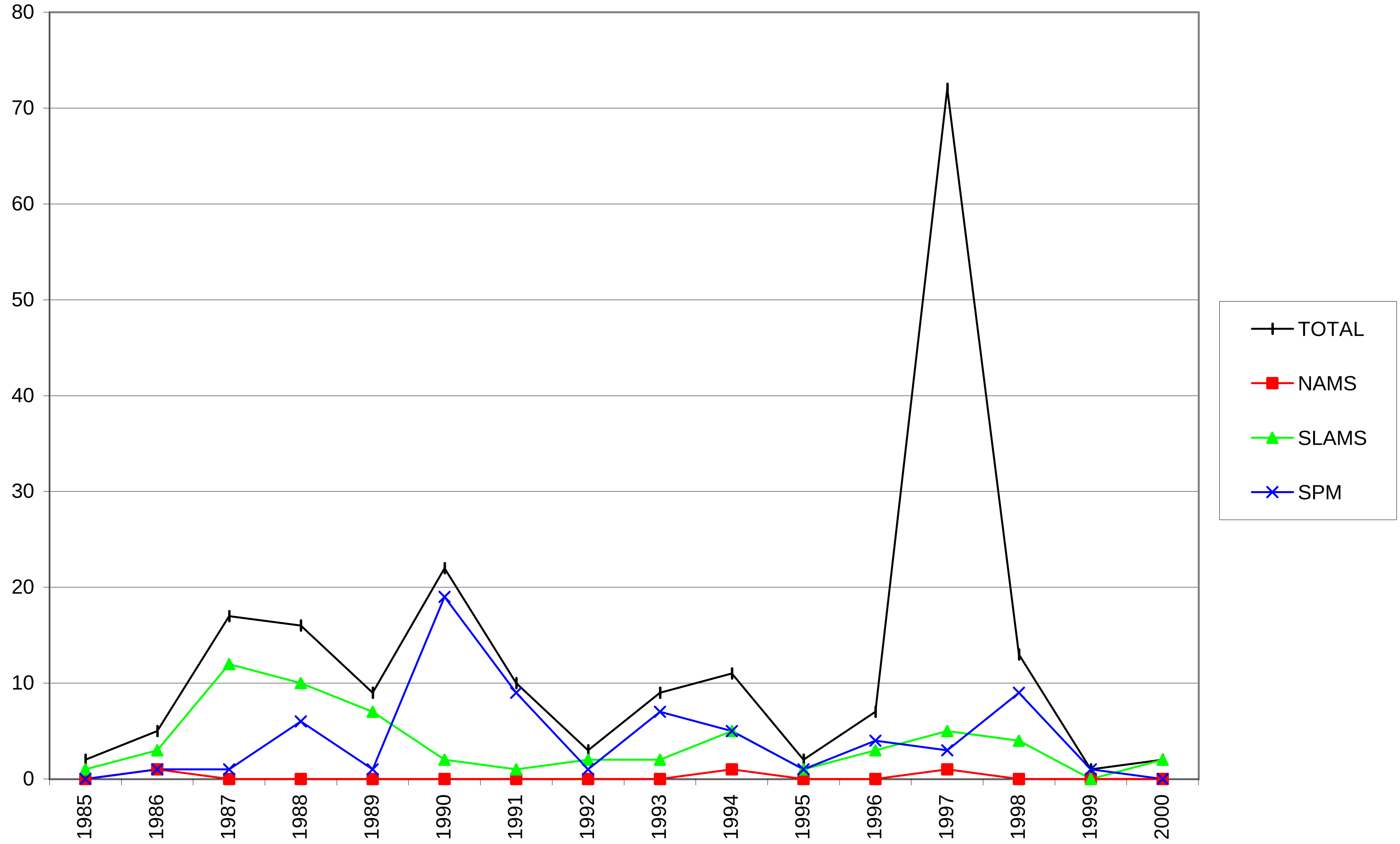
1996
1997
1998
1999
2000
AL Total
NAMS
SLAMS
SPM
Census
Linear (Census)

AL Terminated Parameters



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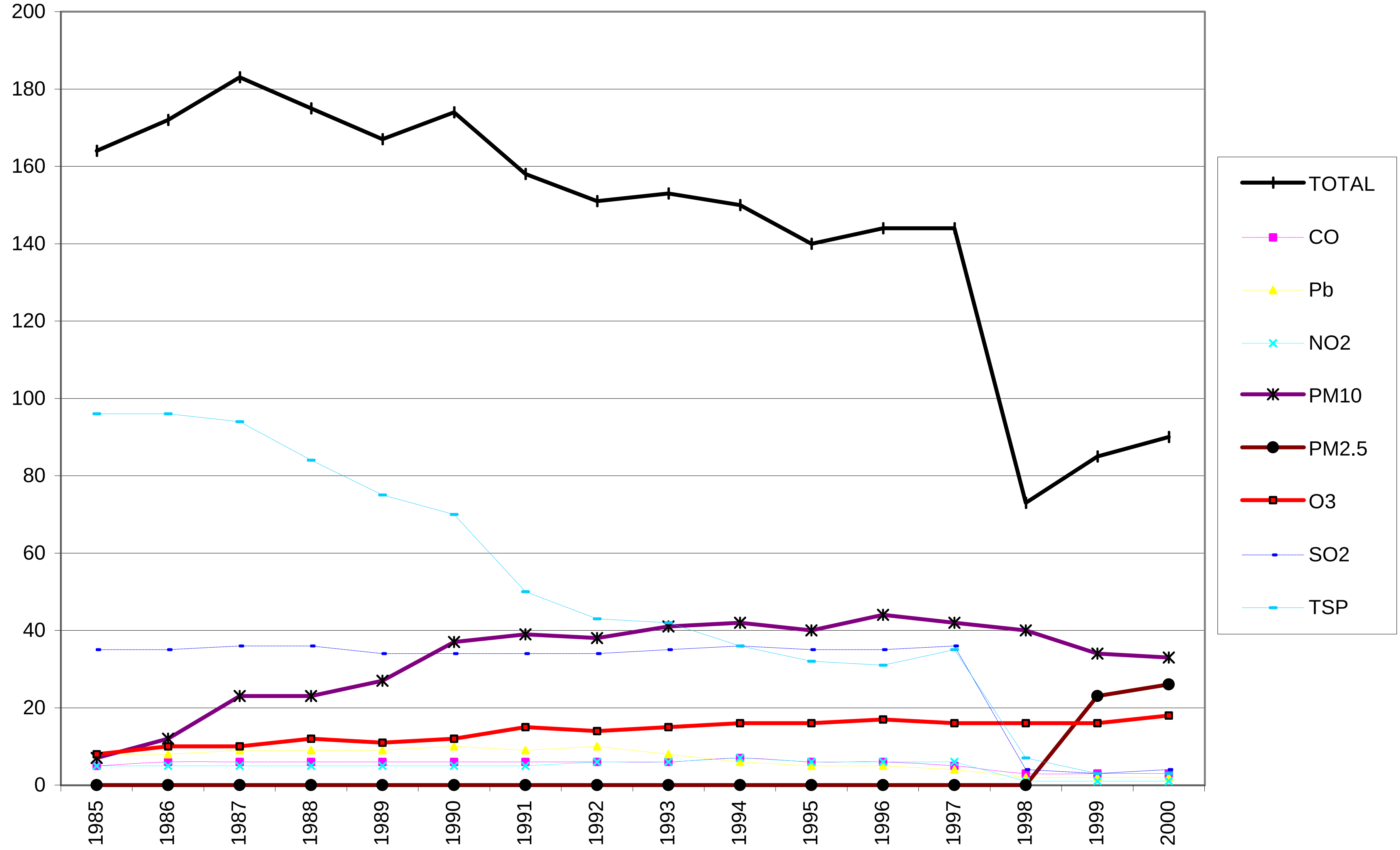

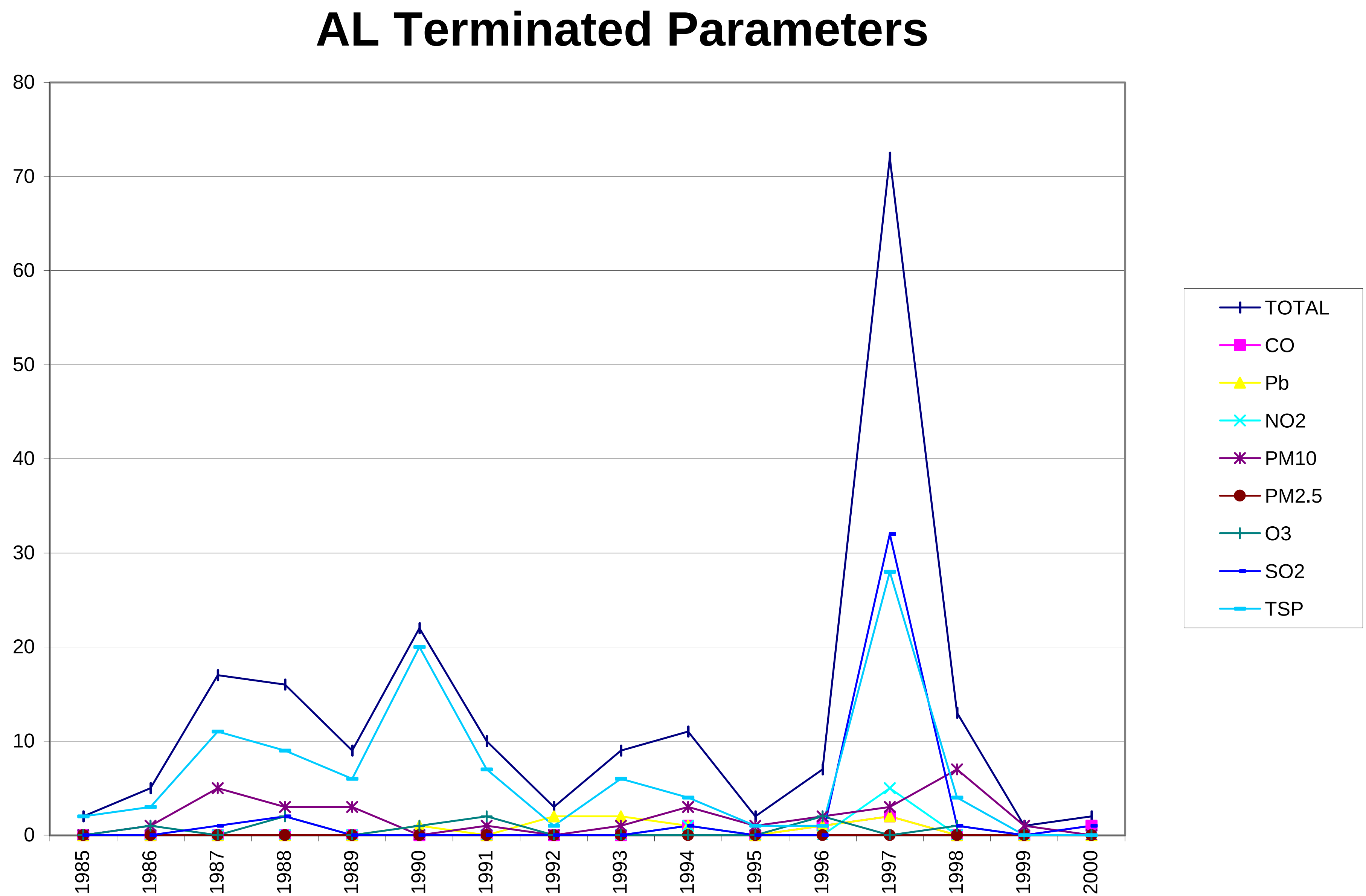
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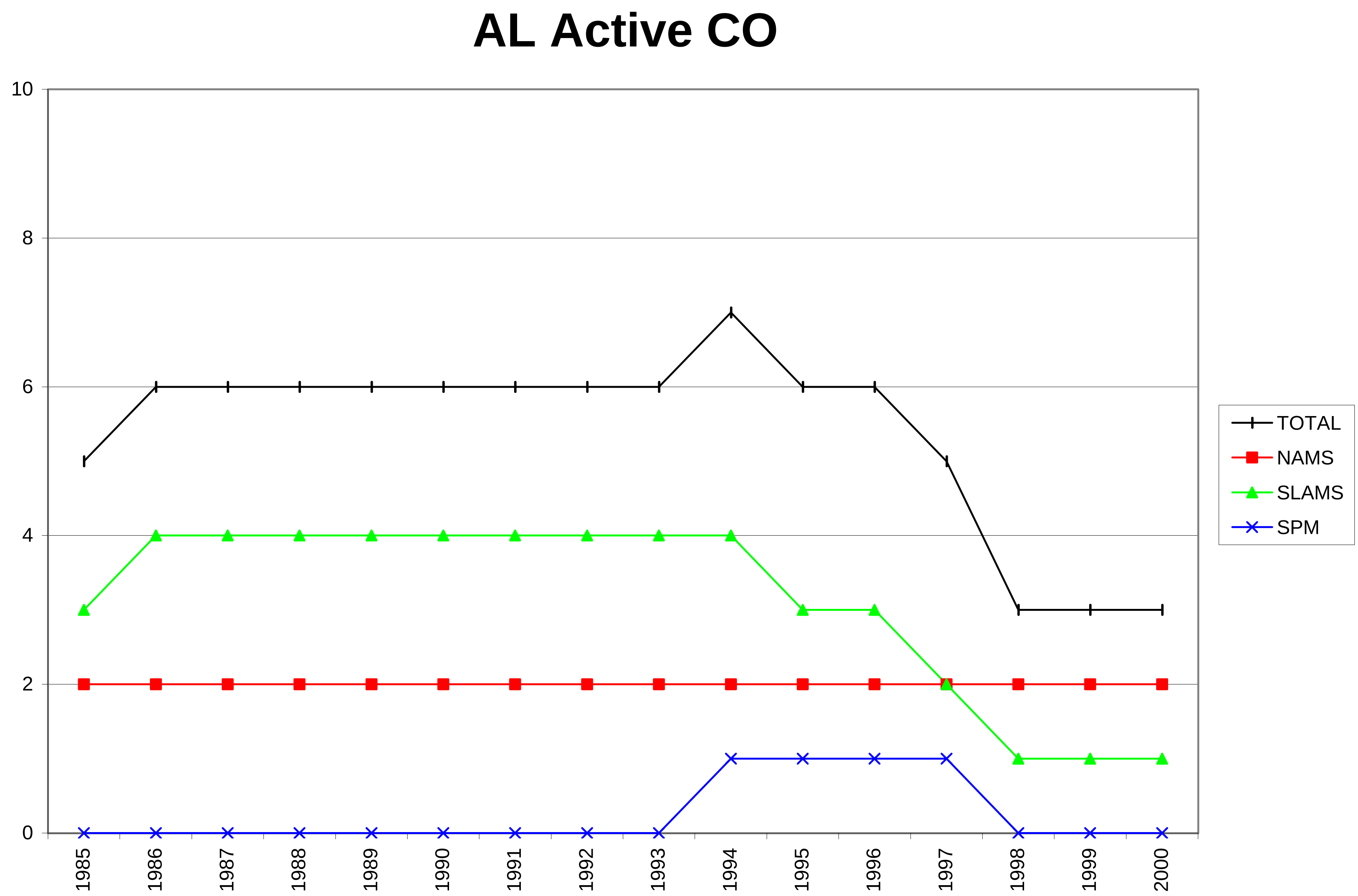
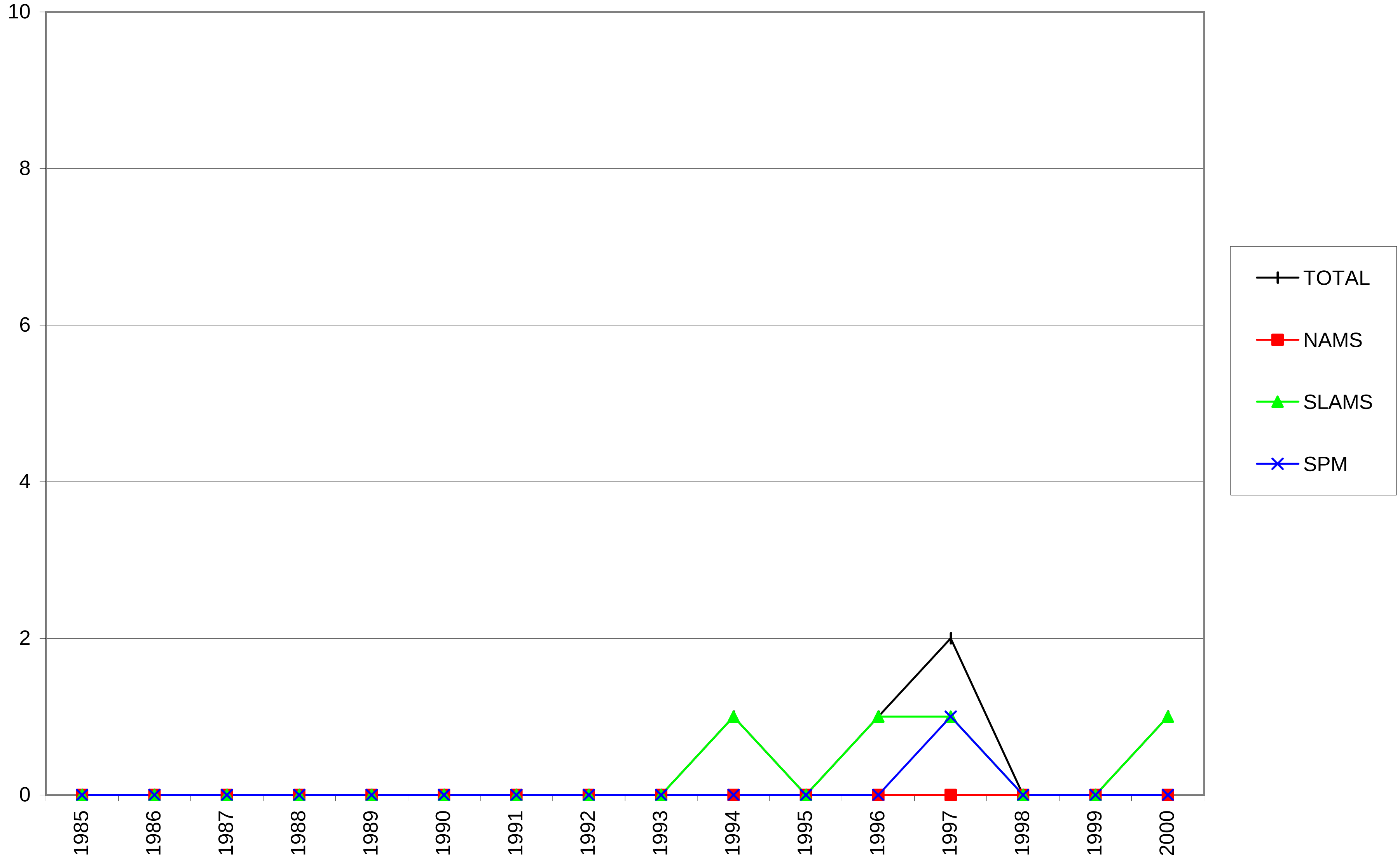
70
60
50
40
30
20
10
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
CO
Pb
NO2
PM10
PM2.5
O3
SO2
TSP

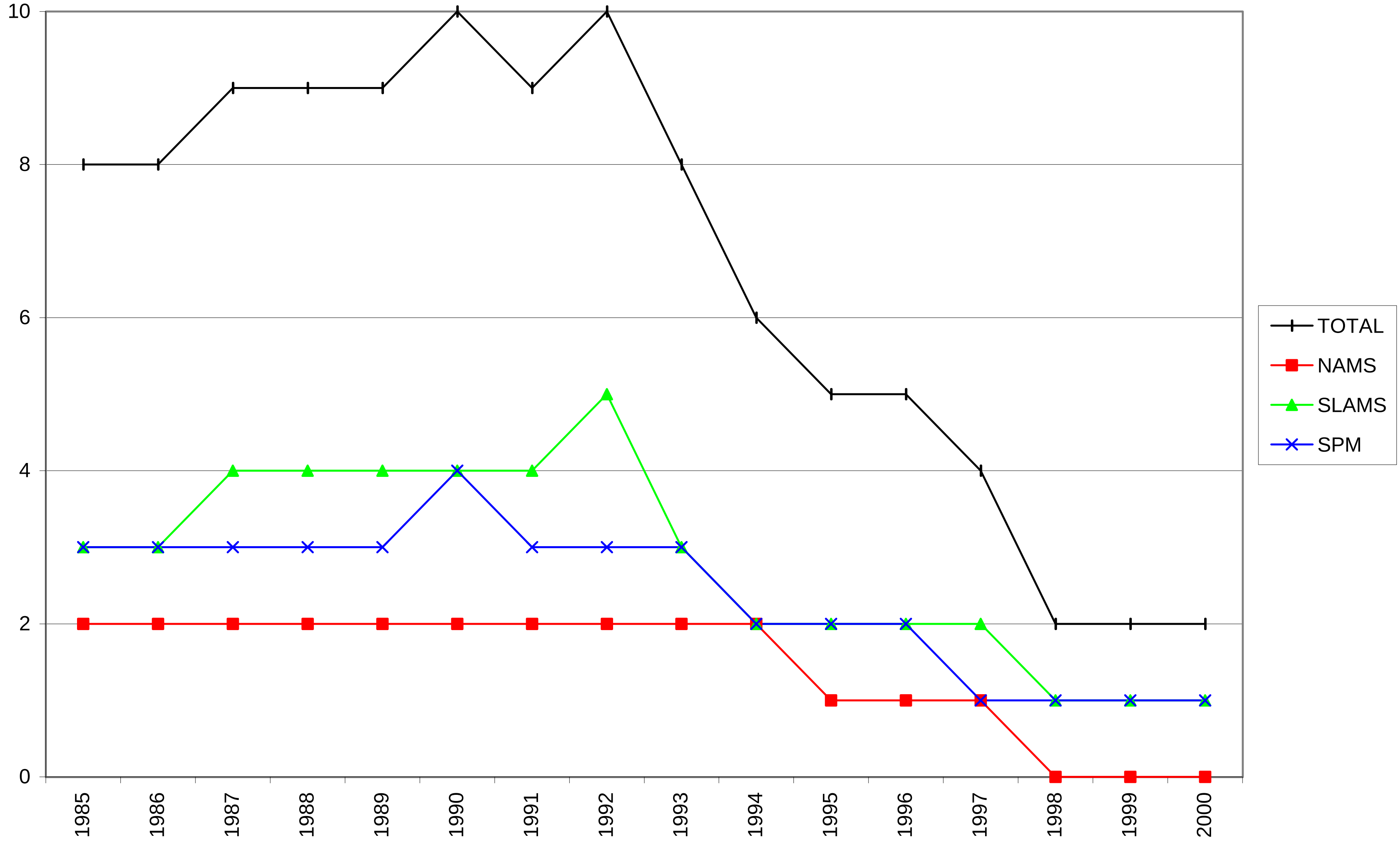


AL Active CO
10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

AL Terminated CO



AL Active Pb



10
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6
4
2
0
1985
1986
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1990
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1993
1994
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1996
1997
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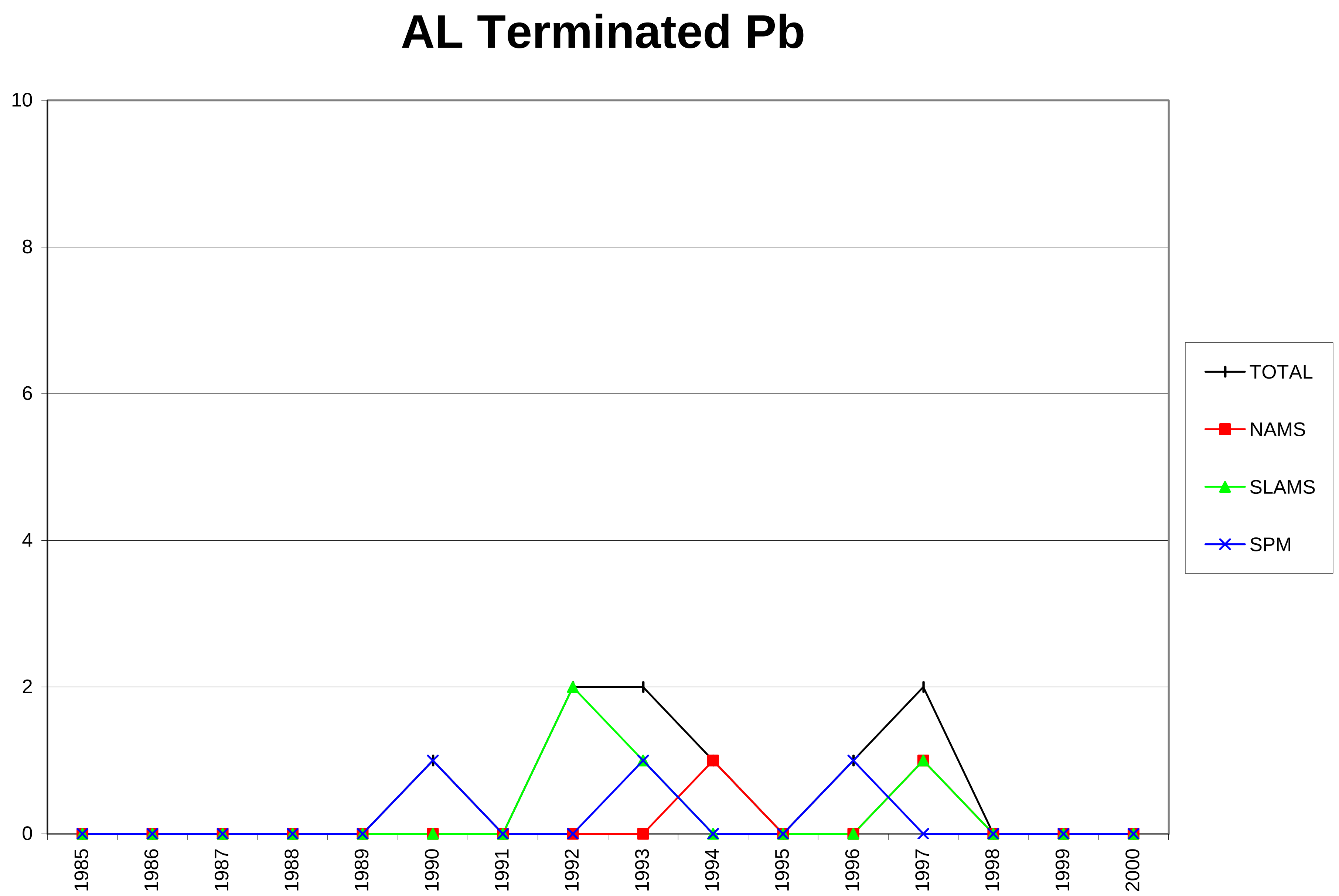
TOTAL
NAMS
SLAMS
SPM



AL Terminated Pb
10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
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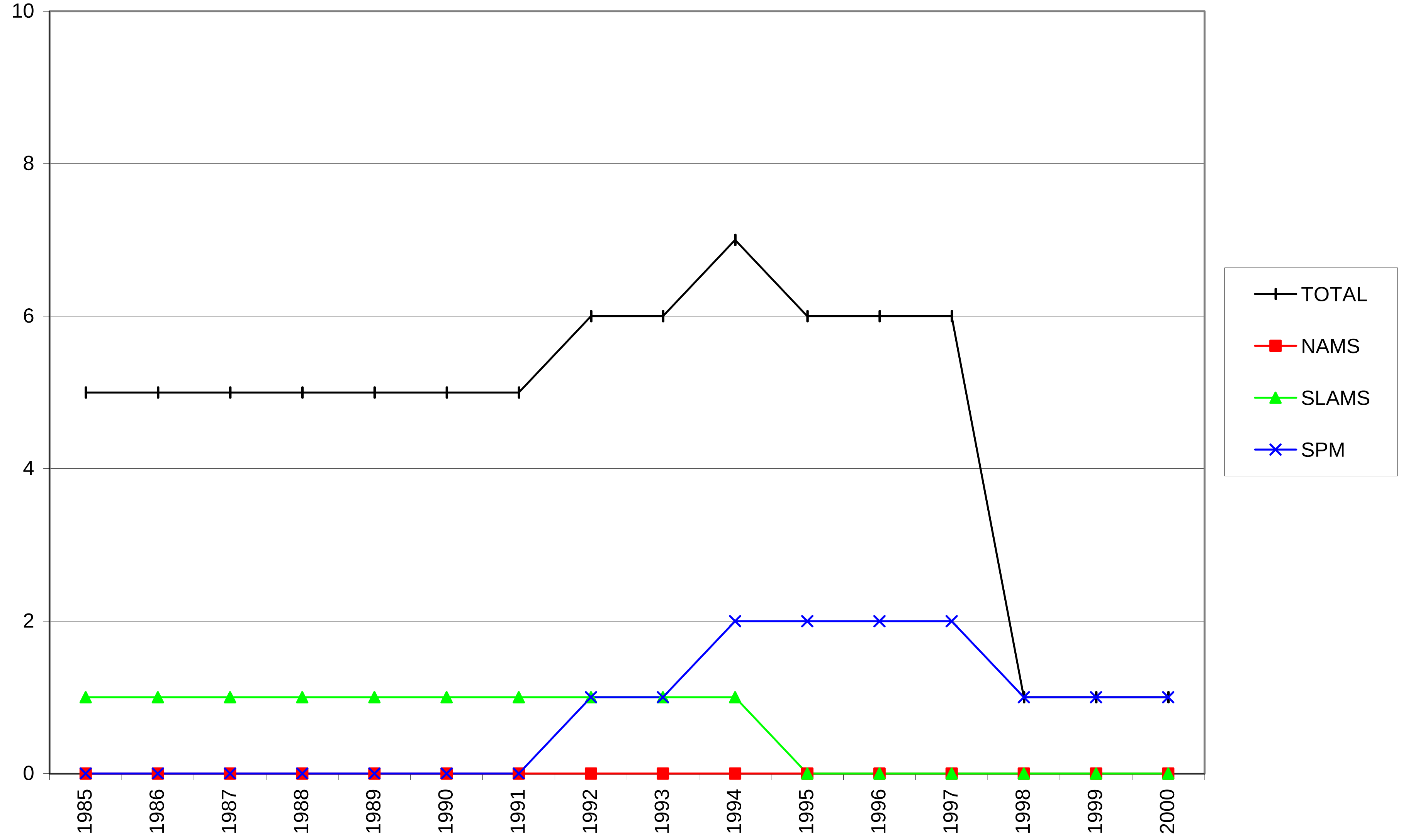
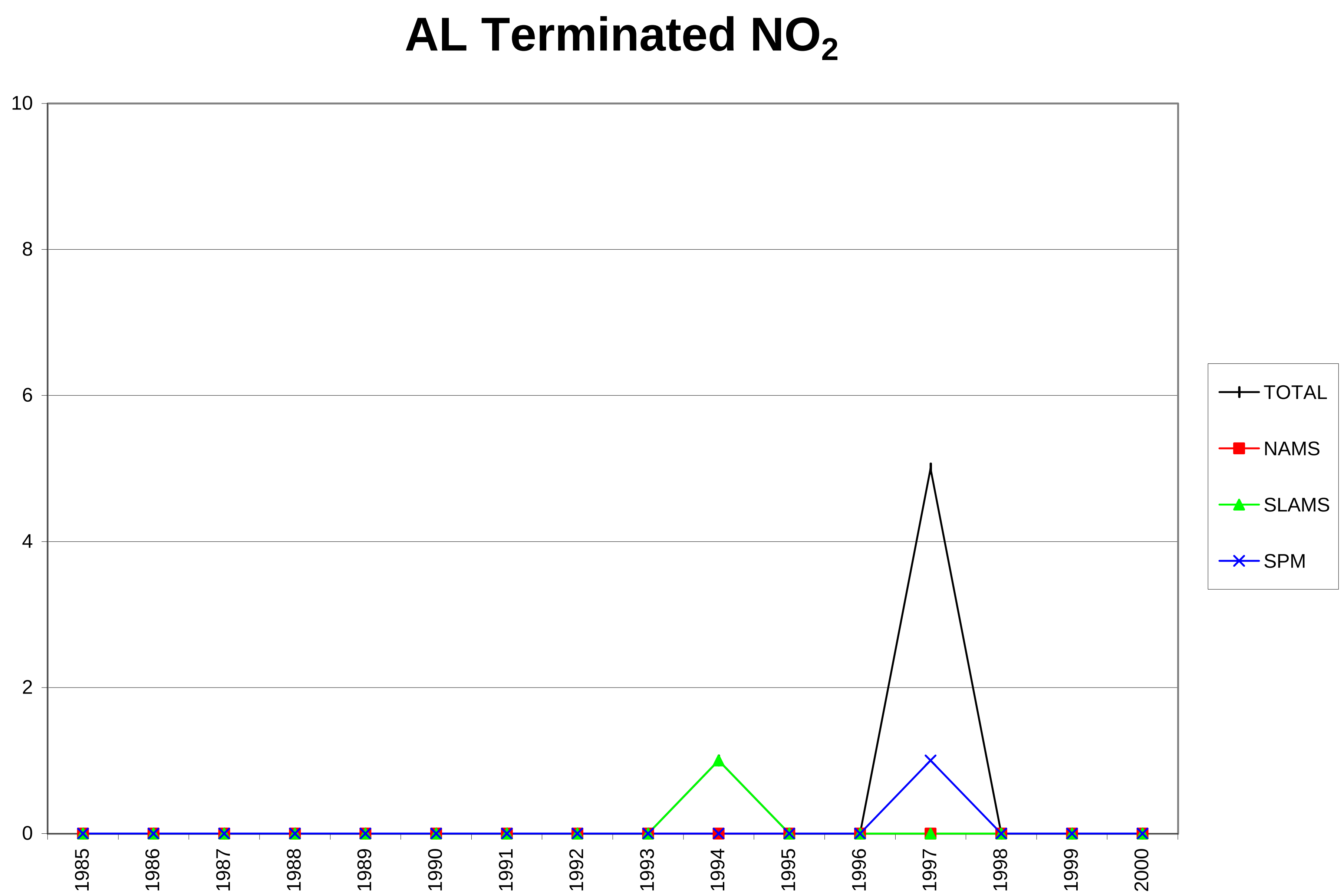
TOTAL
NAMS
SLAMS
SPM

AL Active NO_2





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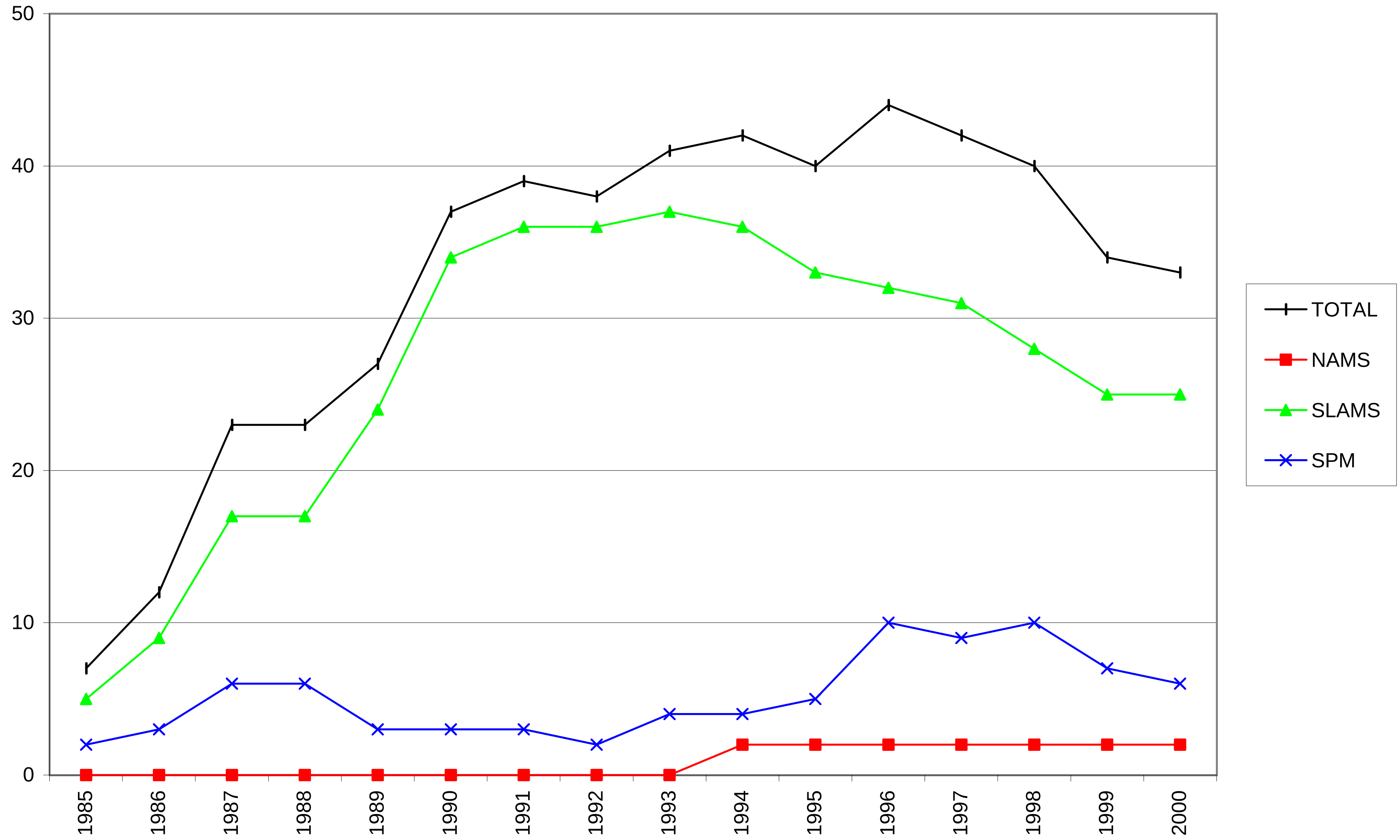
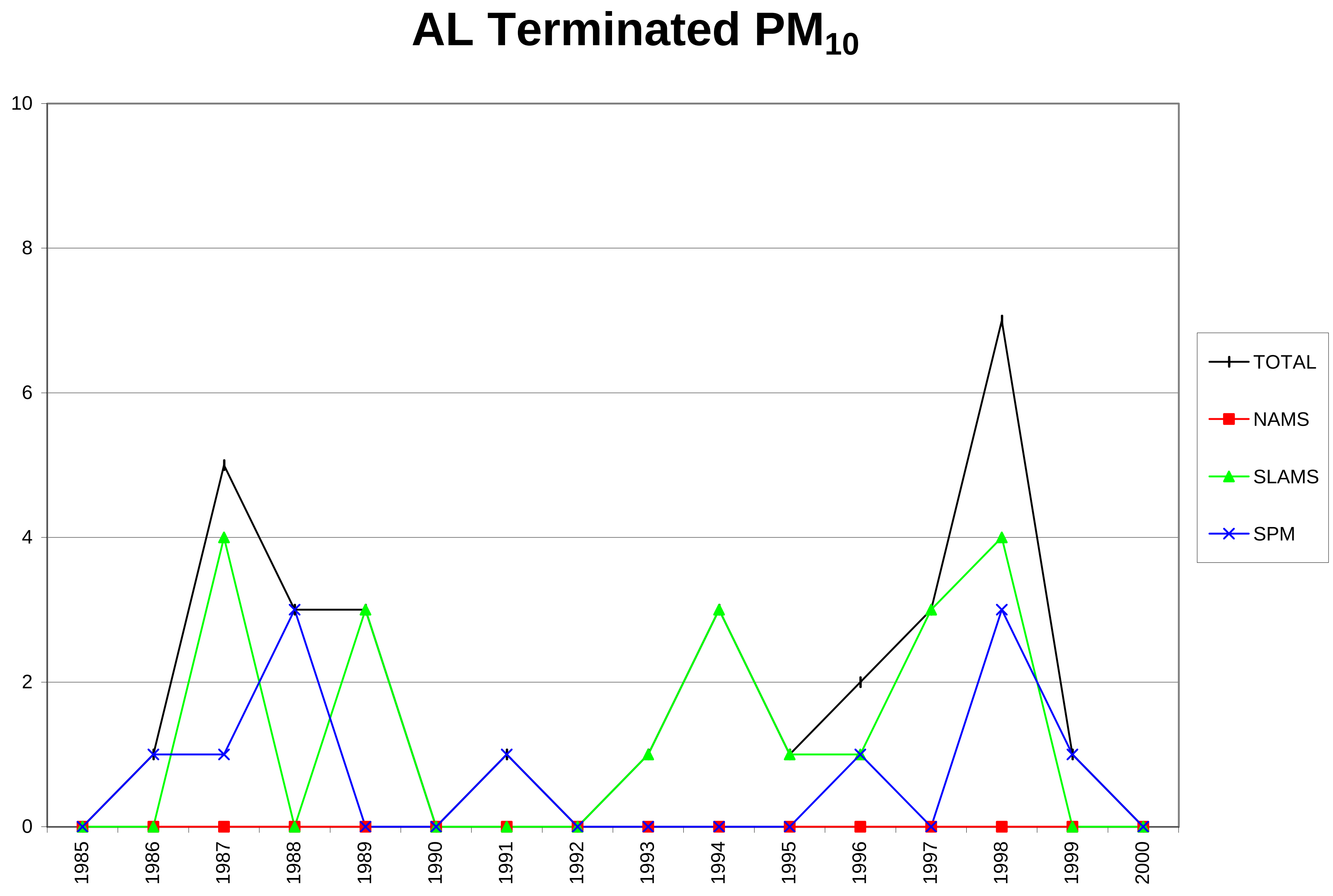
10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

AL Active PM_{10}




AL Terminated PM10
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8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
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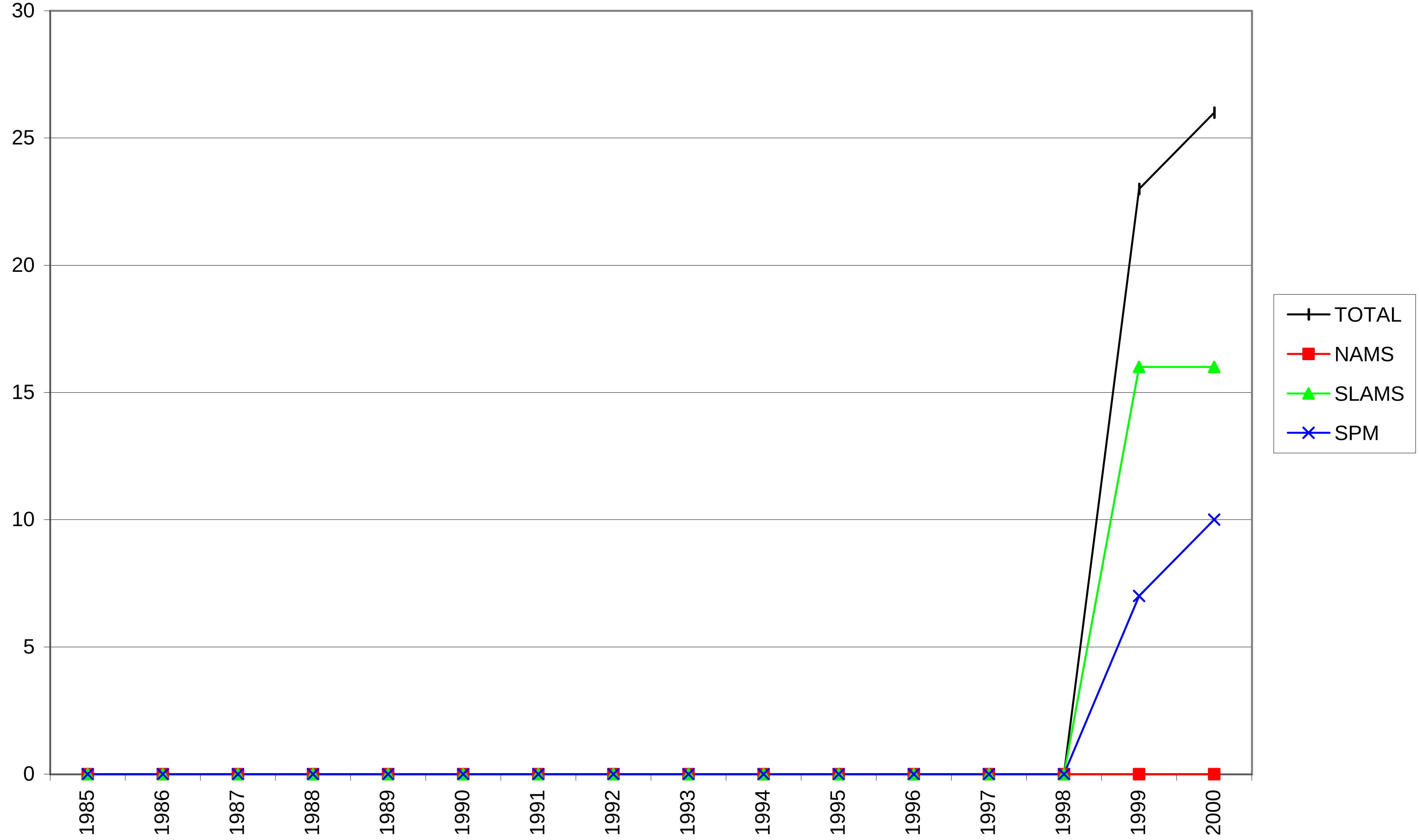
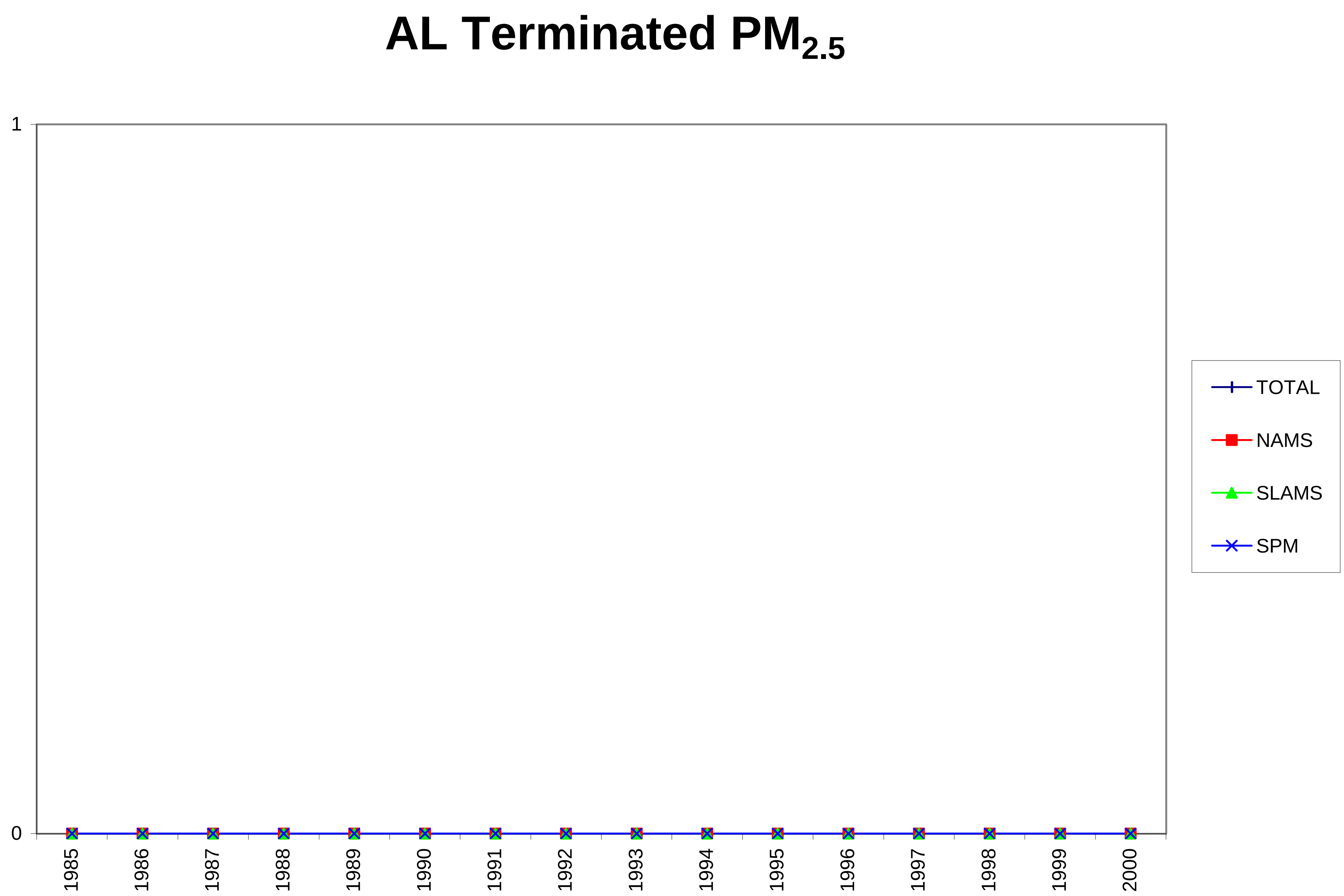
1999
2000
TOTAL
NAMS
SLAMS
SPM

AL Active $PM_{2.5}$

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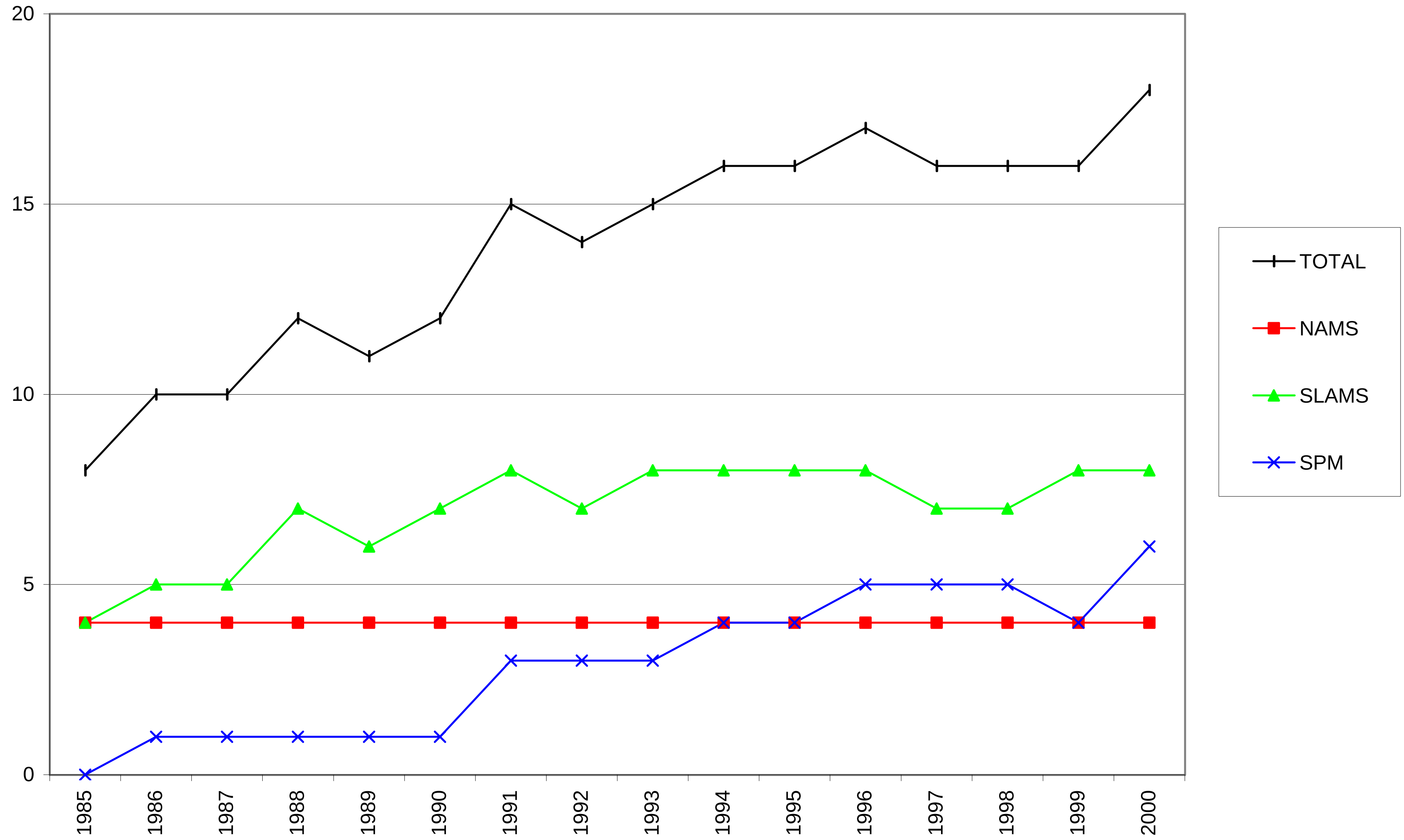
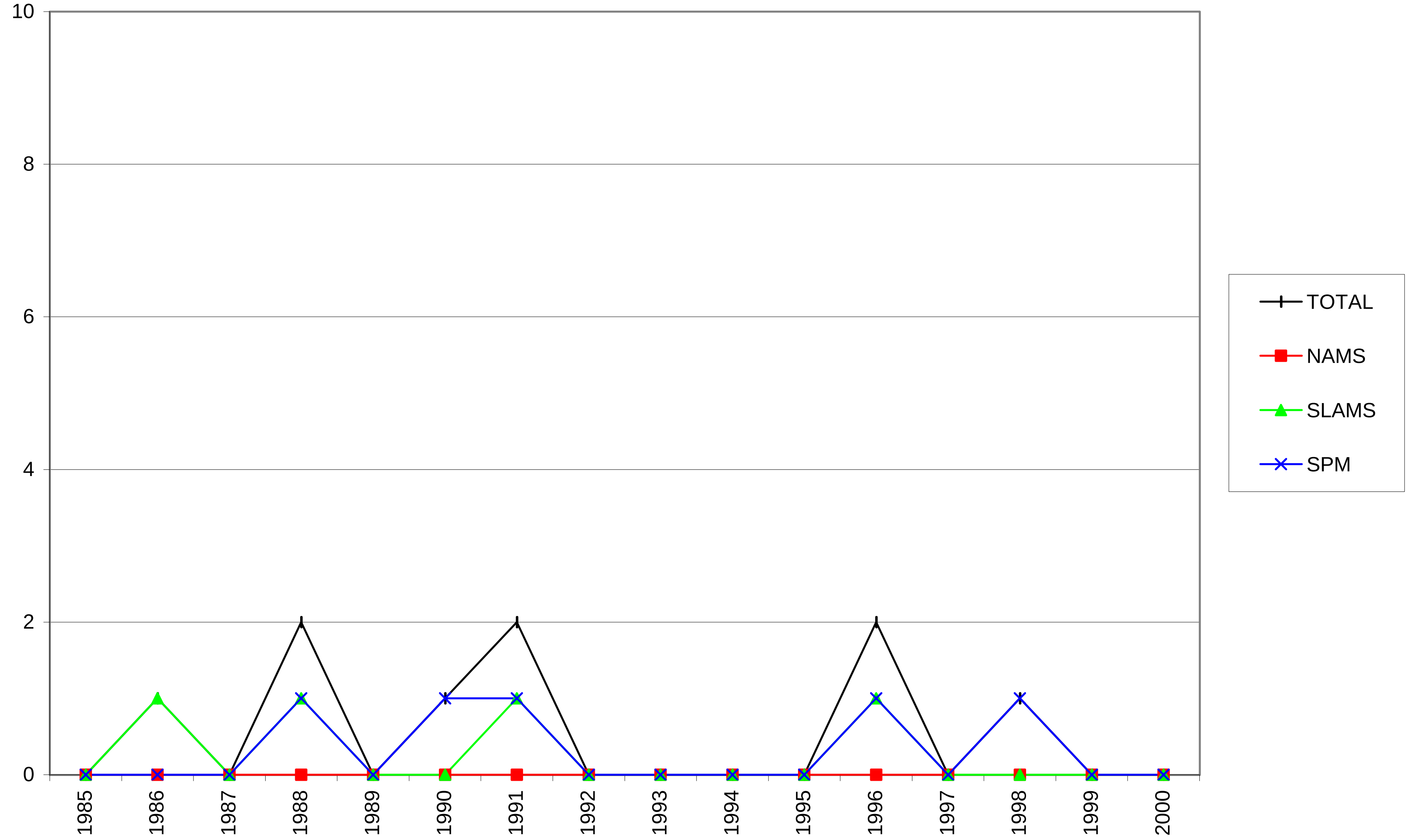
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

AL Active O_3

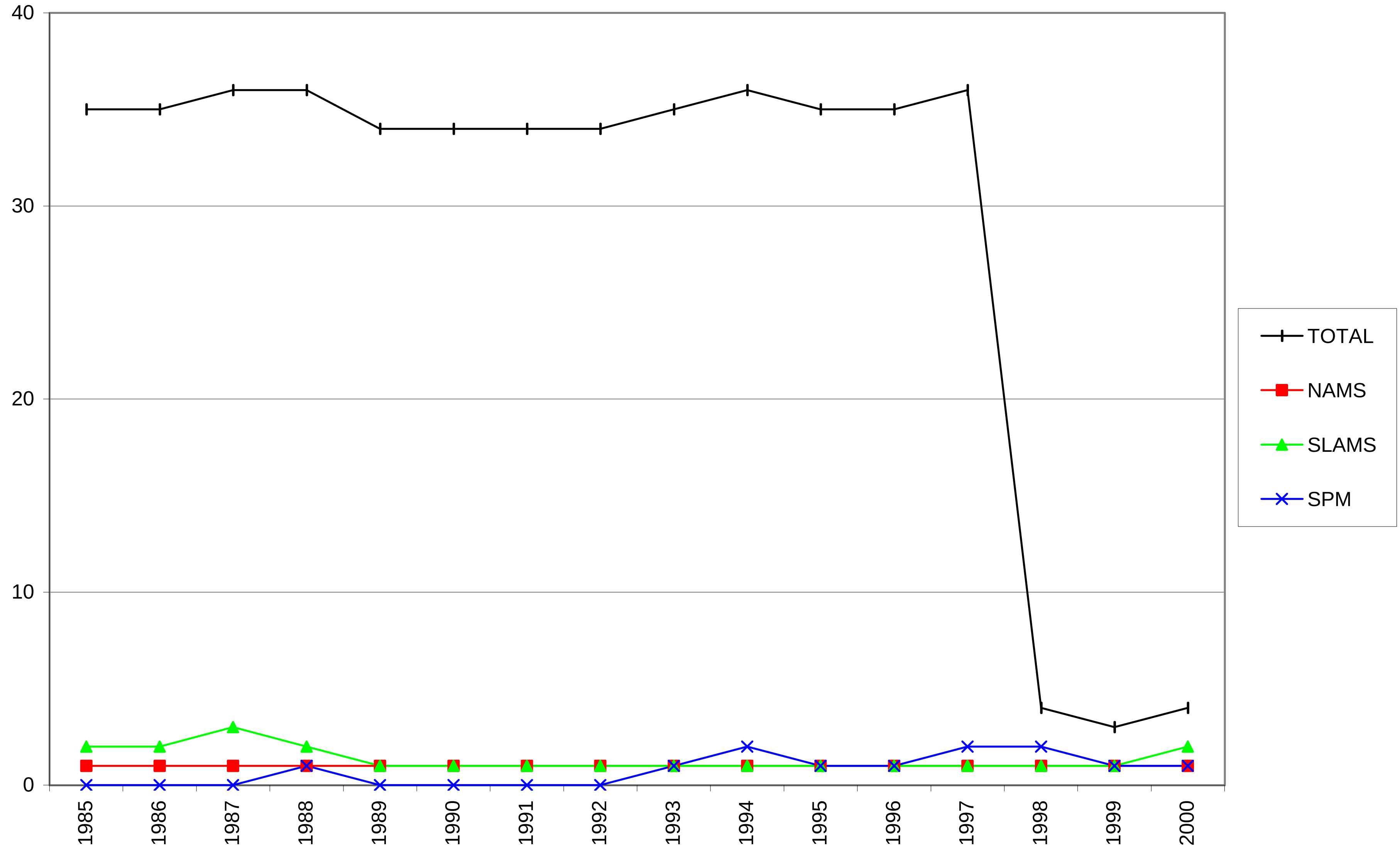


20
15
10
5
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

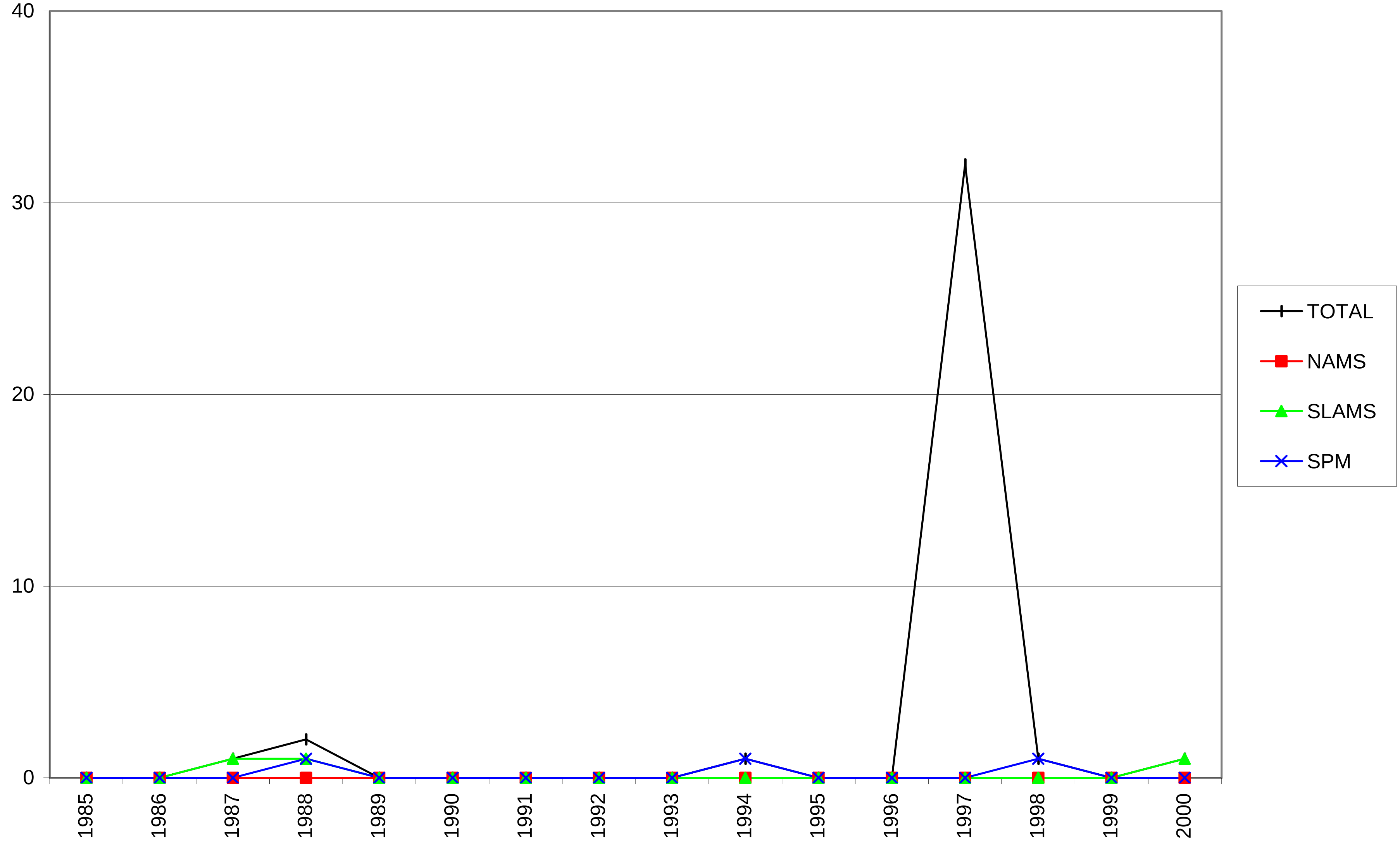
AL Terminated O_3



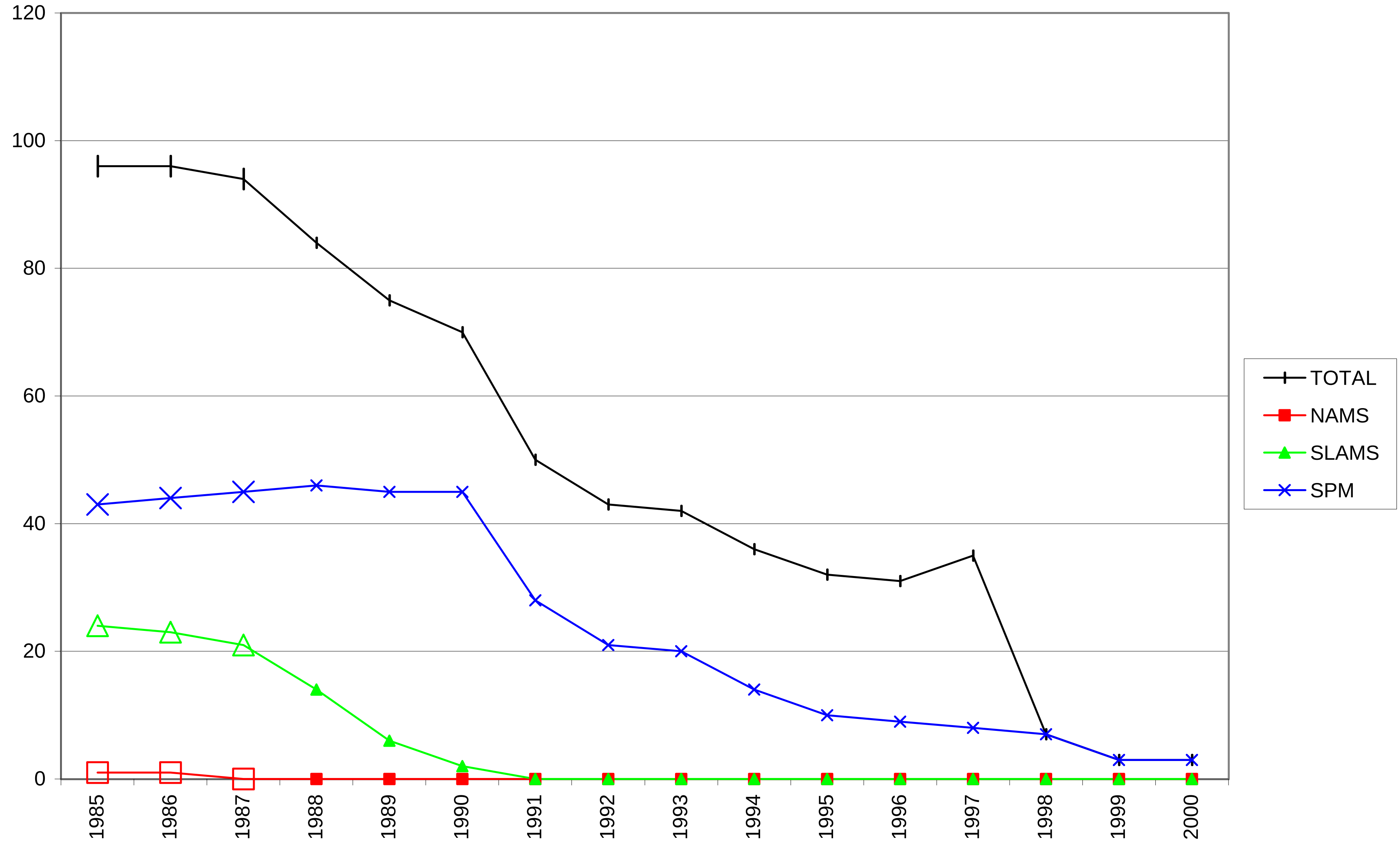
AL Active SO_2

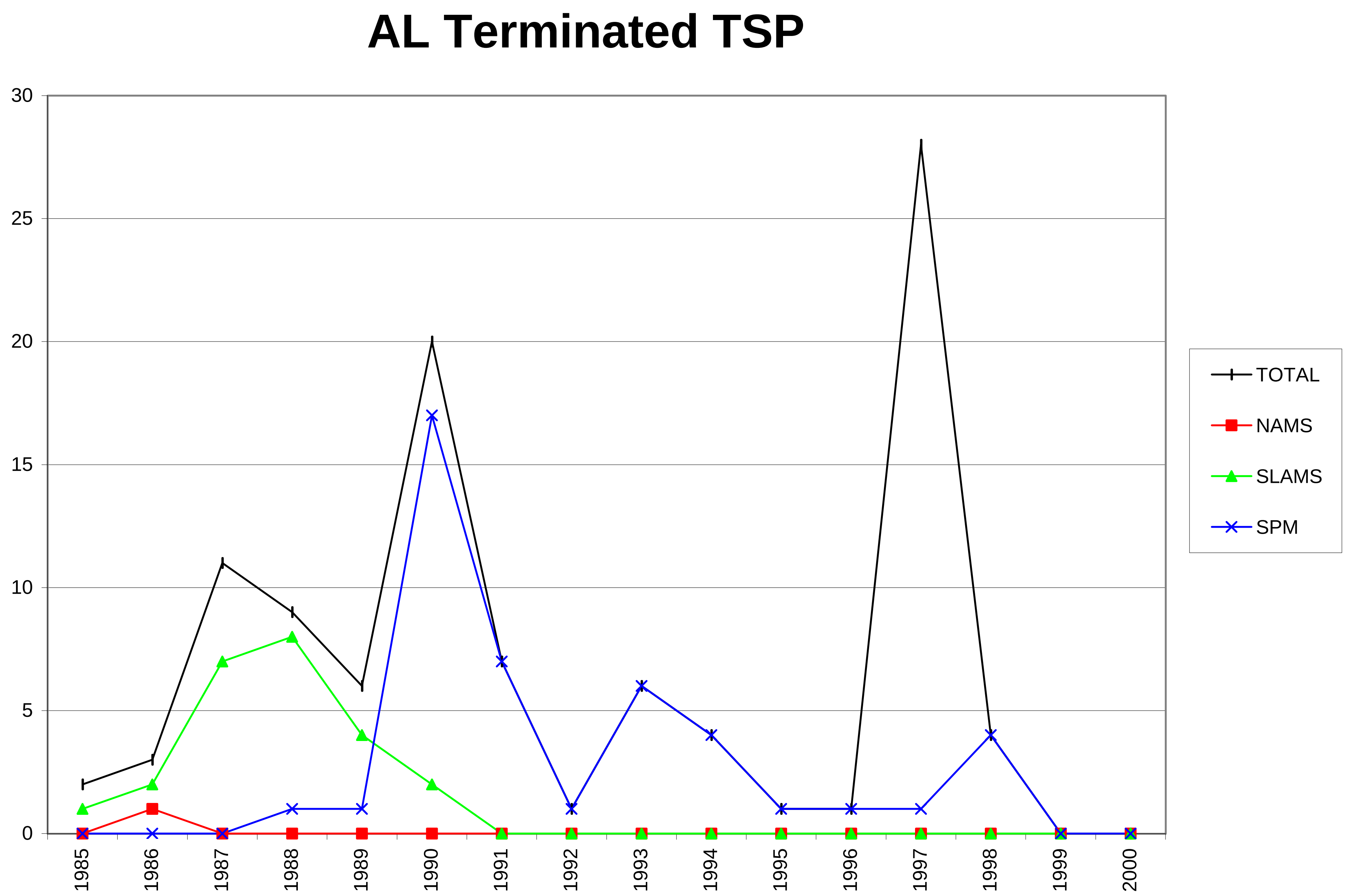


AL Terminated SO_2

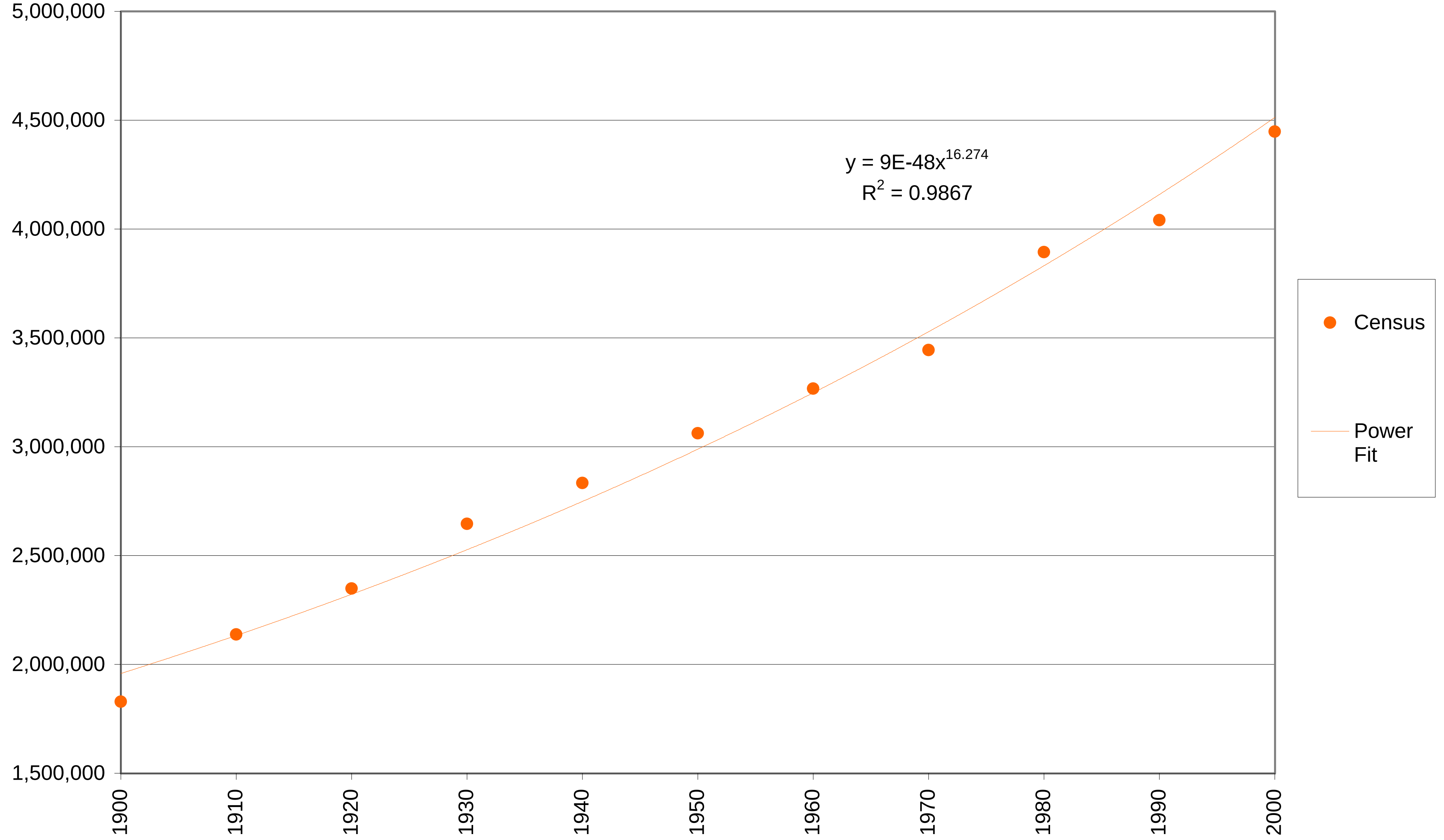


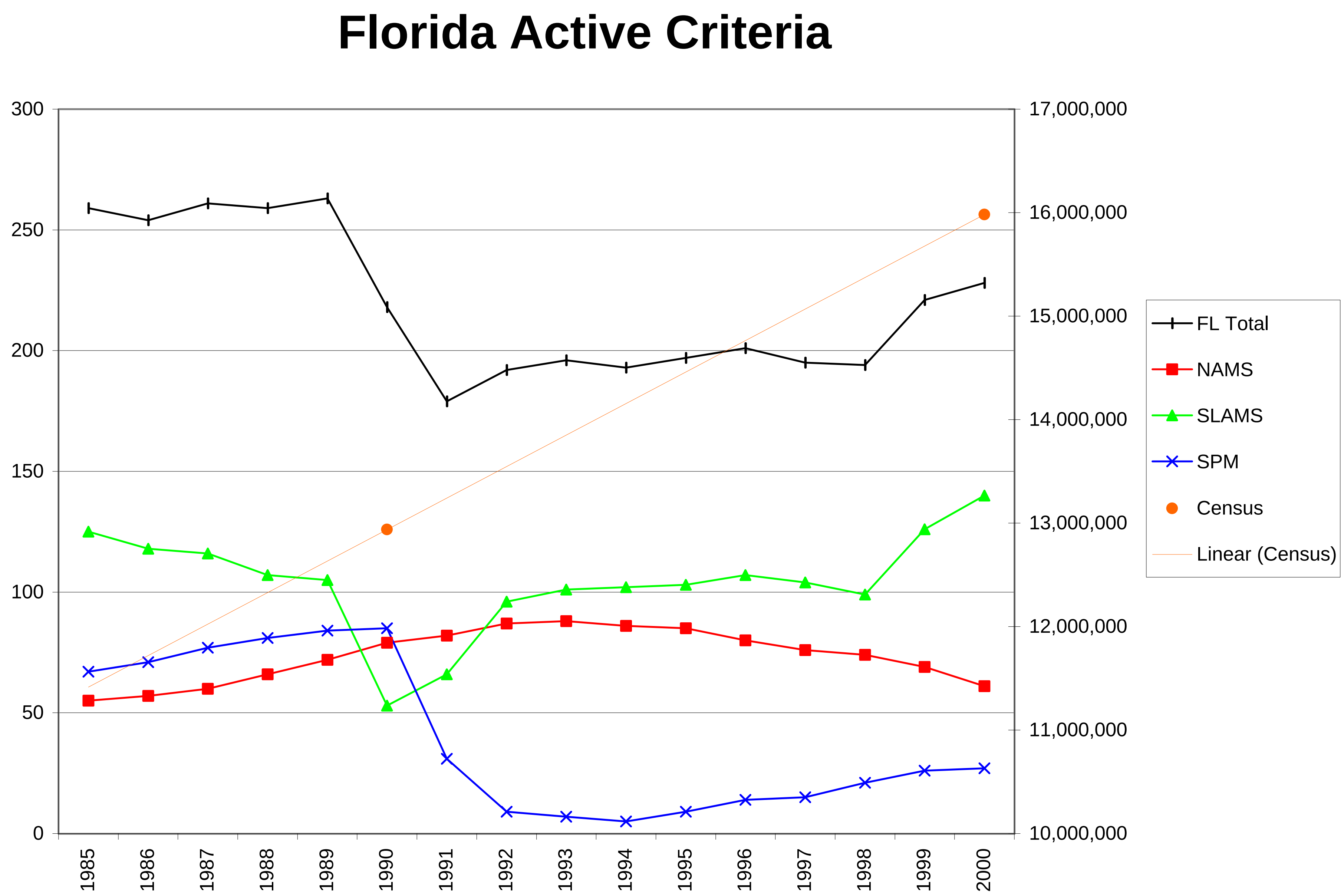
AL ActiveTSP



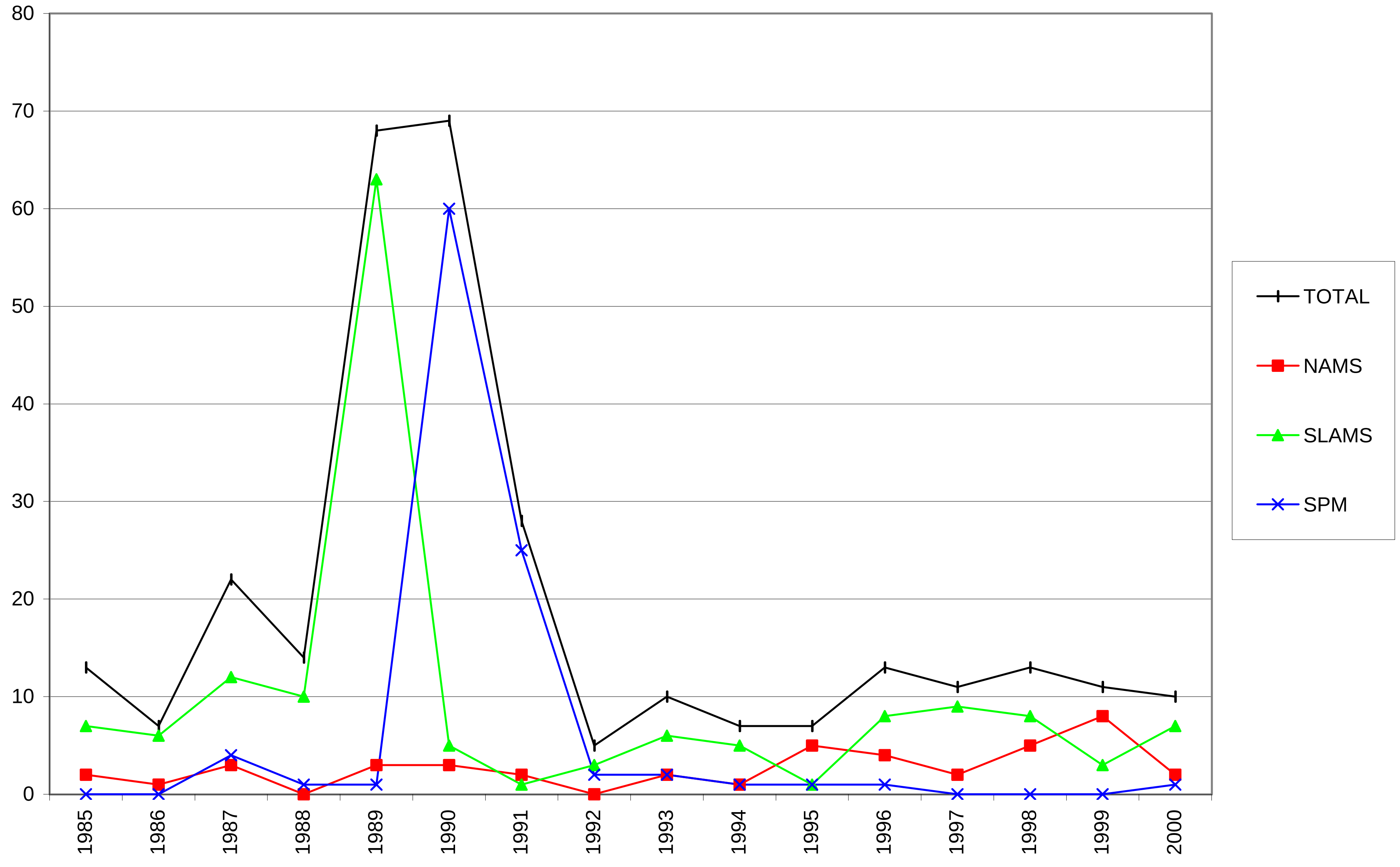

AL Terminated TSP
30
25
20
15
10
5
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

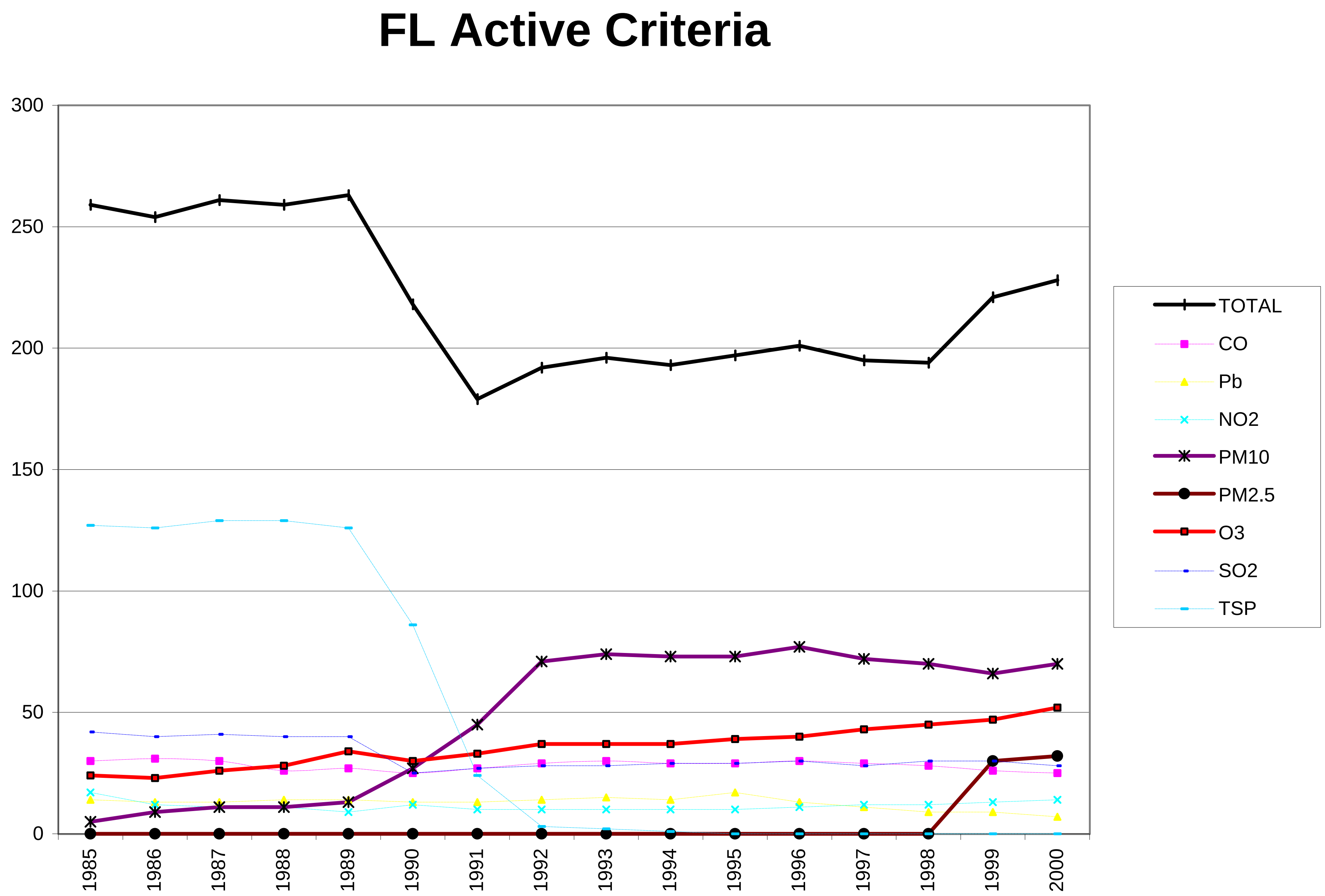
Alabama Population Growth

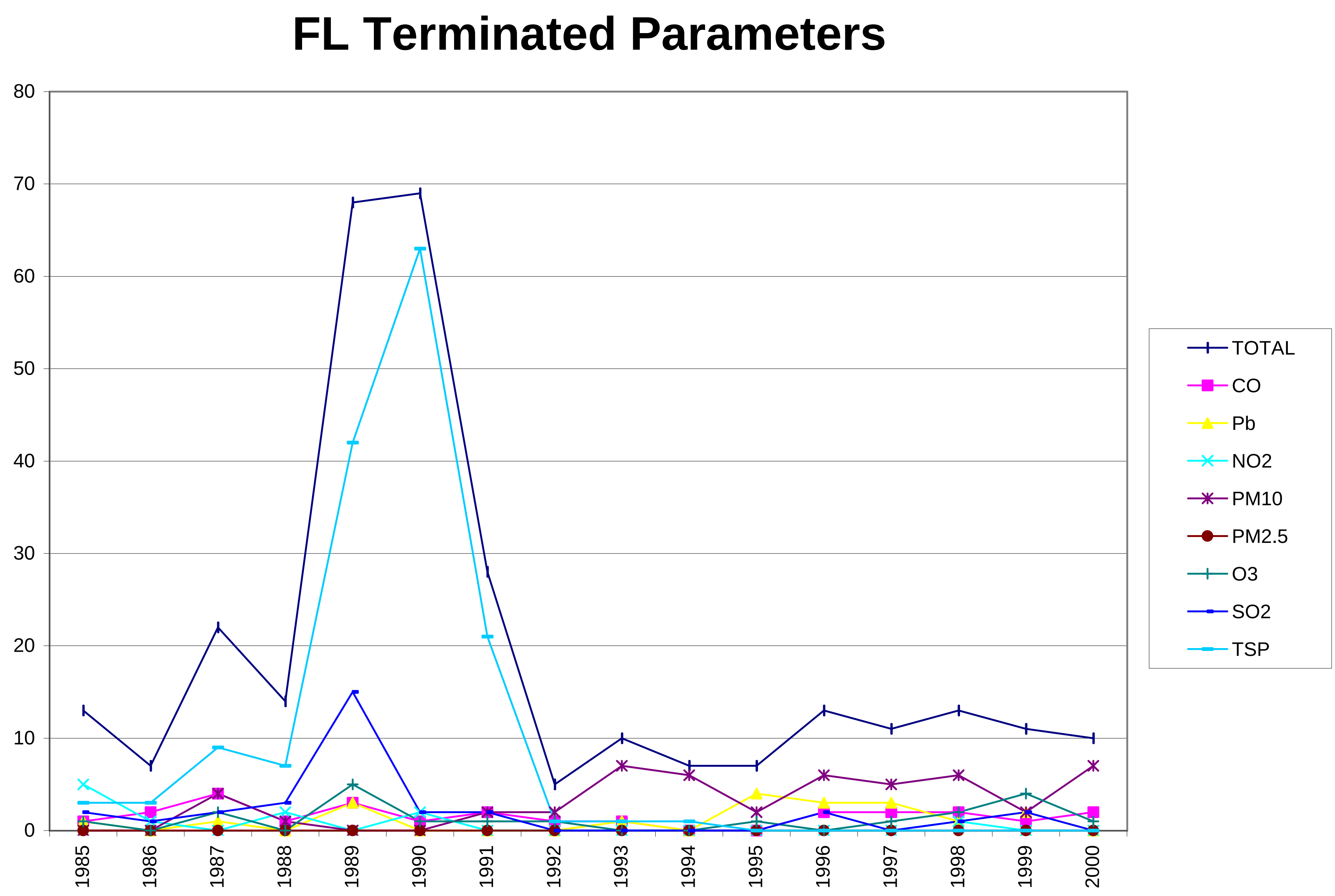



Florida Active Criteria
300
250
200
150
100
50
0
17,000,000
16,000,000
15,000,000
14,000,000
13,000,000
12,000,000
11,000,000
10,000,000
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
FL Total
NAMS
SLAMS
SPM
Census
Linear (Census)

FL Terminated Parameters

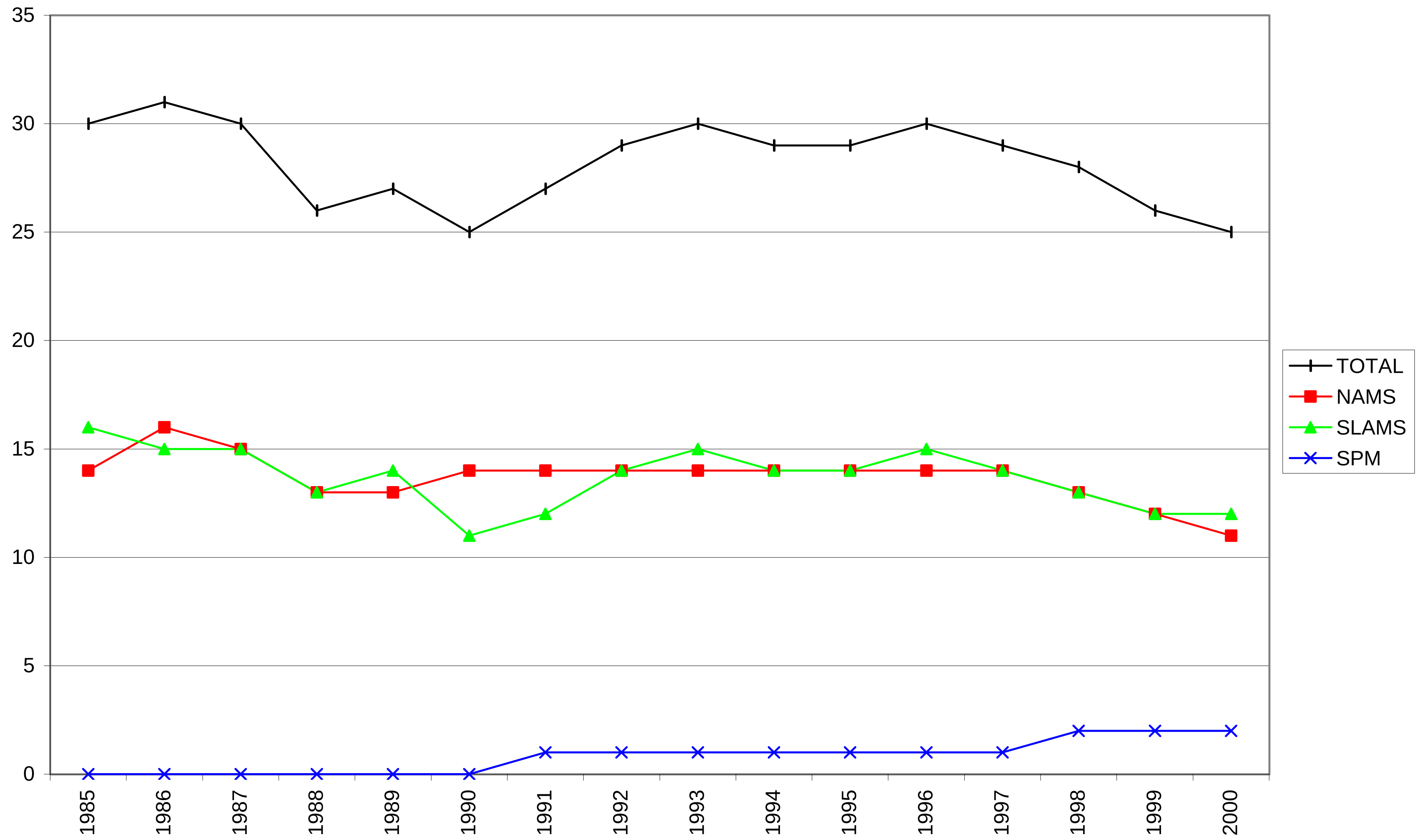



FL Active Criteria
300
250
200
150
100
50
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
CO
Pb
NO2
PM10
PM2.5
O3
SO2
TSP

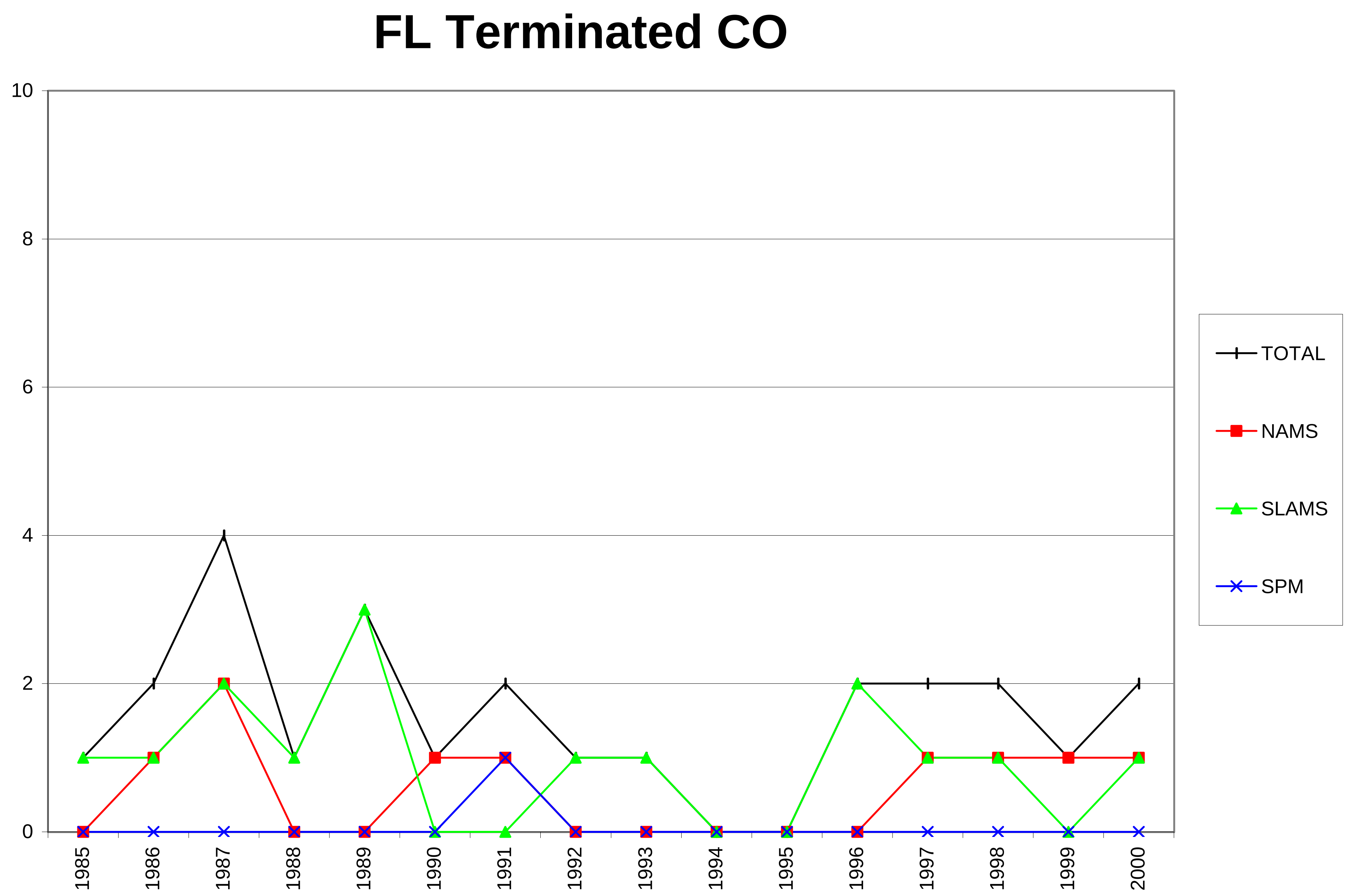


FL Terminated Parameters
80
70
60
50
40
30
20
10
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
CO
Pb
NO2
PM10
PM2.5
O3
SO2
TSP

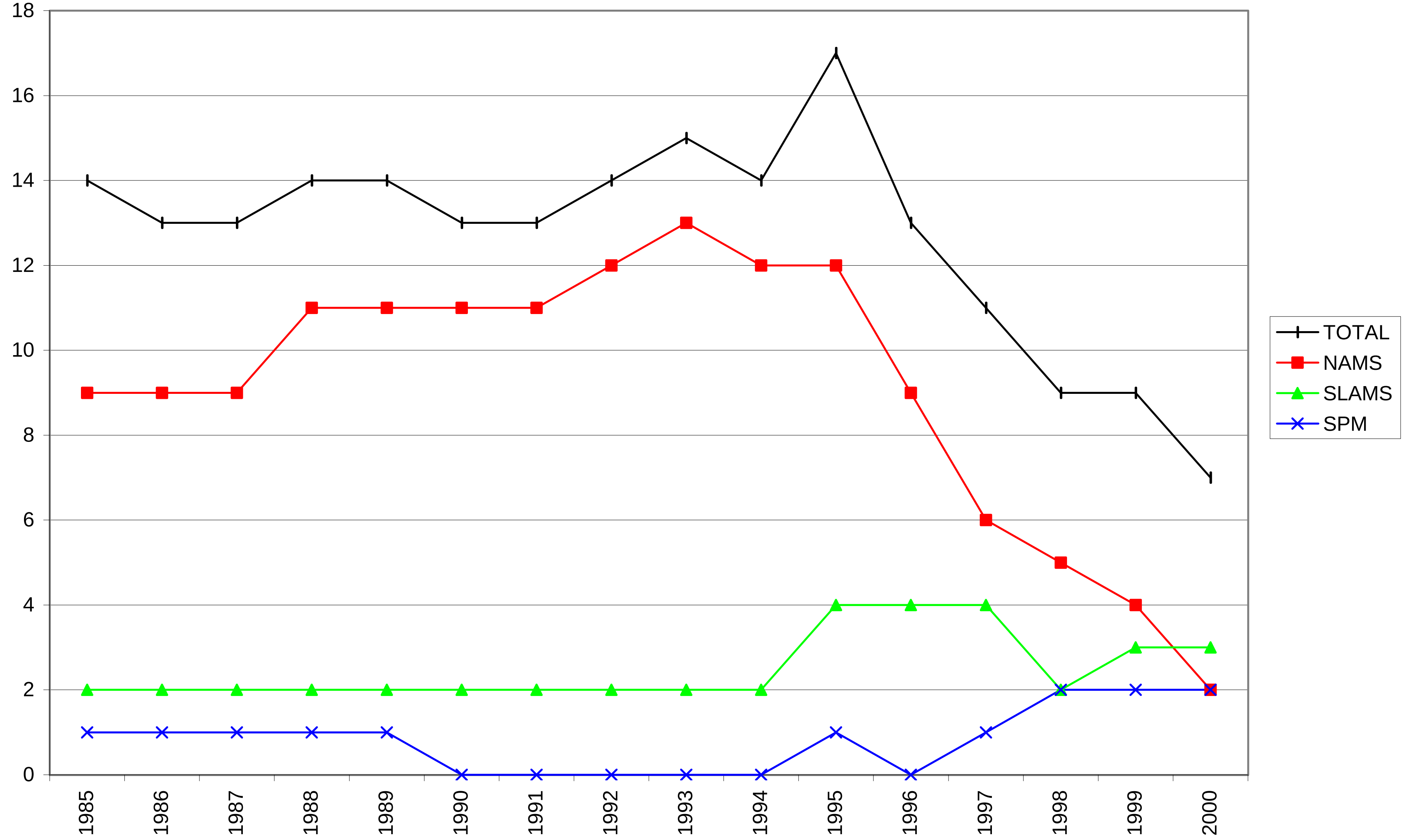
FL Active CO



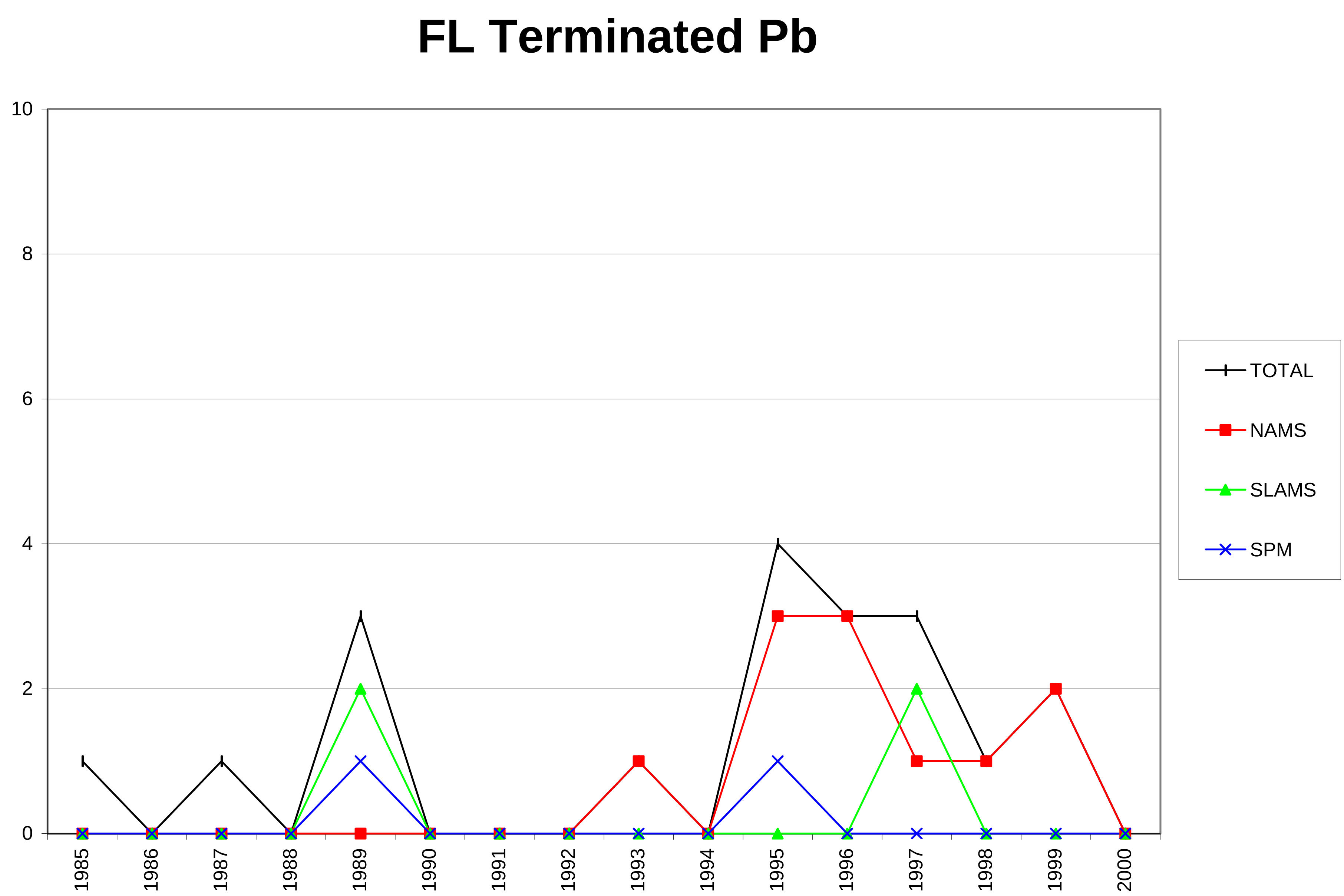
35
30
25
20
15
10
5
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM


FL Terminated CO
10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

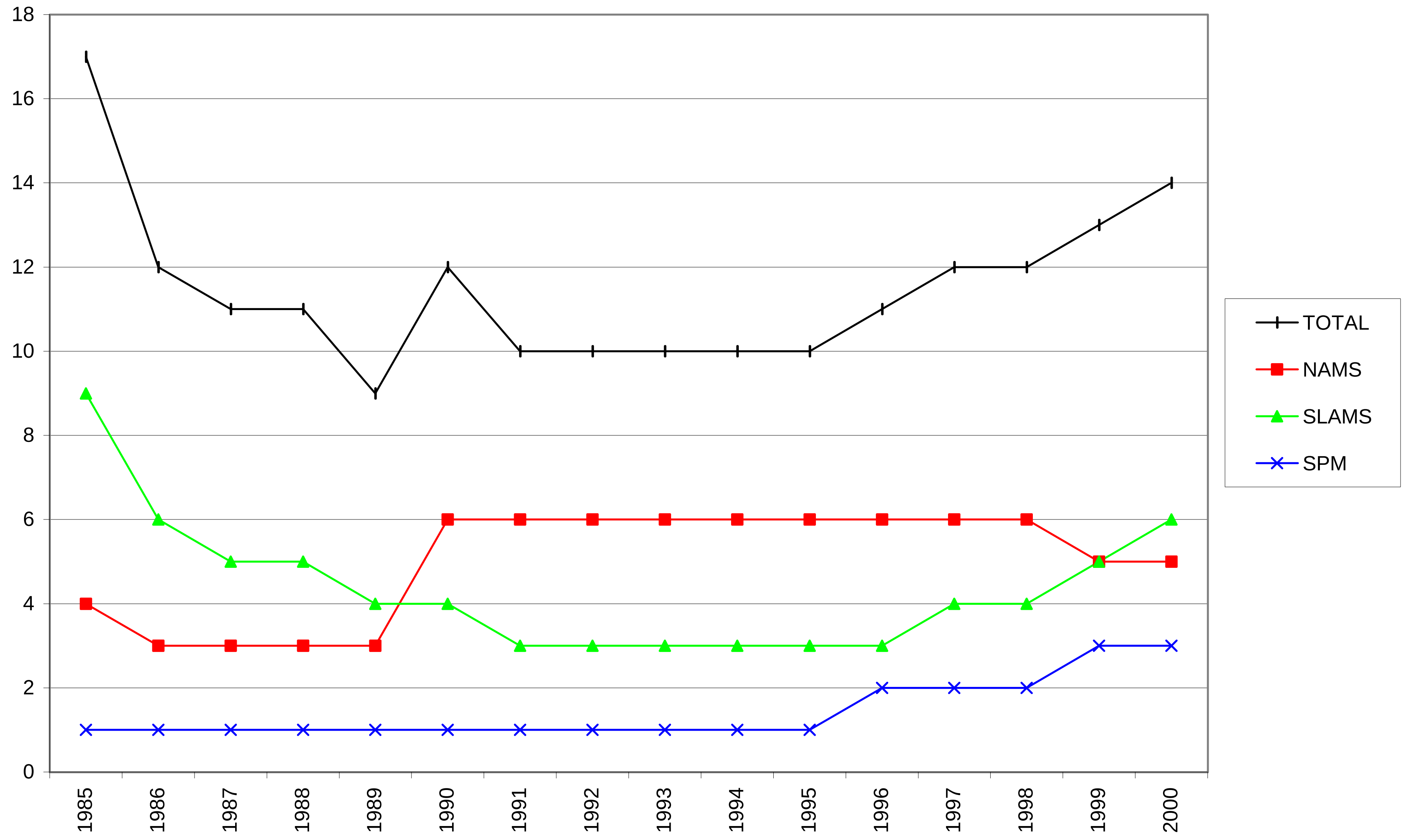
FL Active Pb



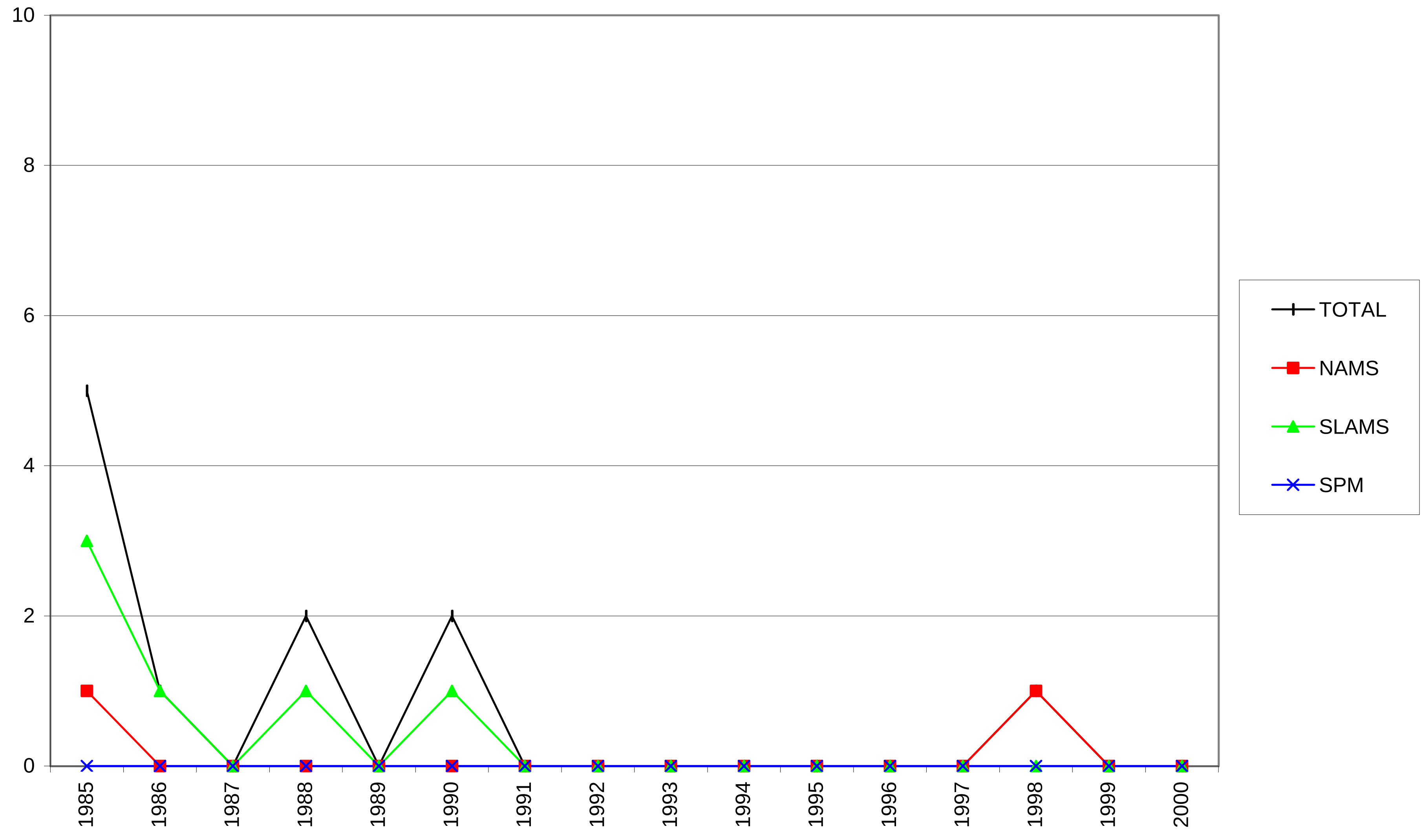
18
16
14
12
10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM


FL Terminated Pb
10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

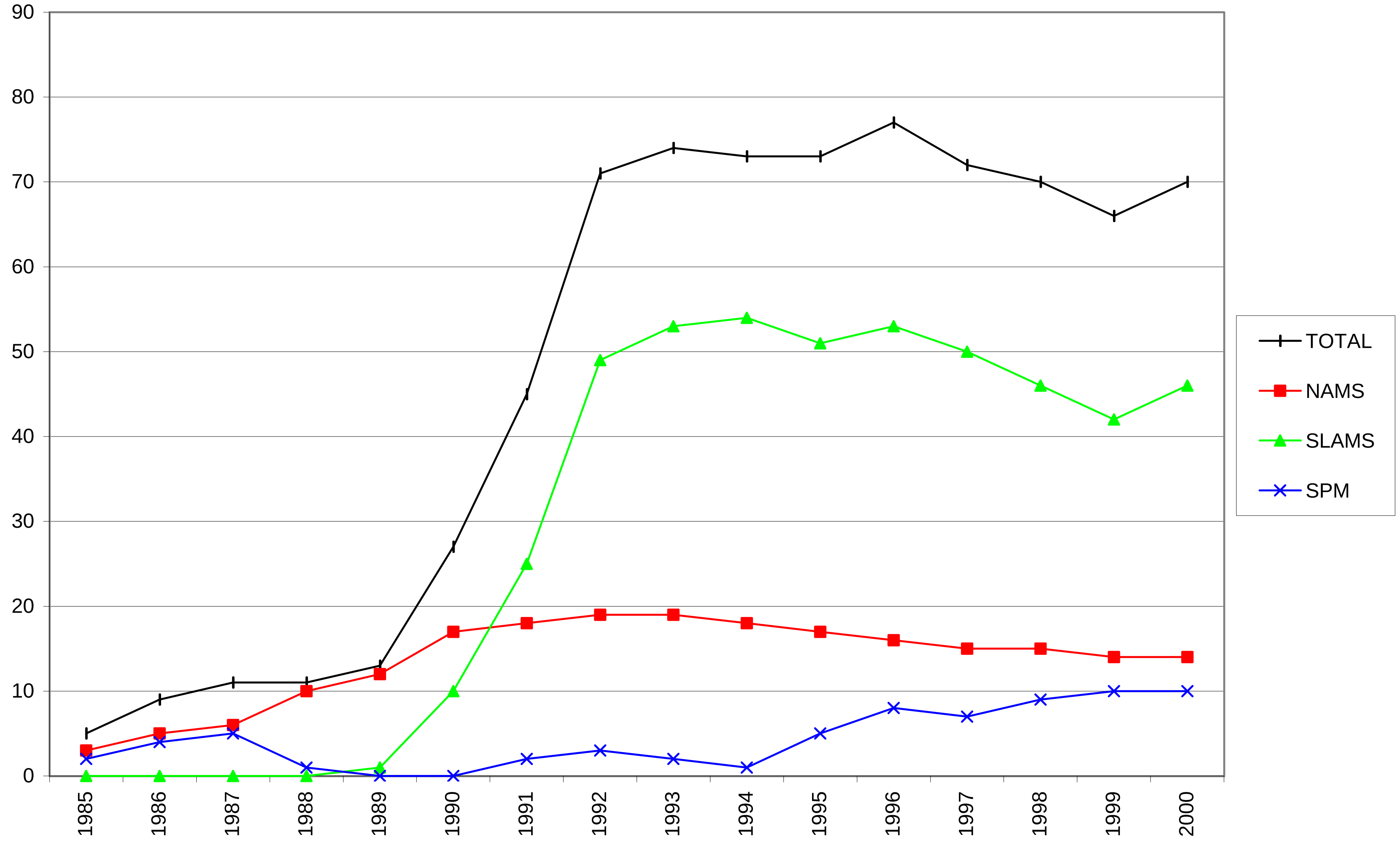
FL Active NO_2

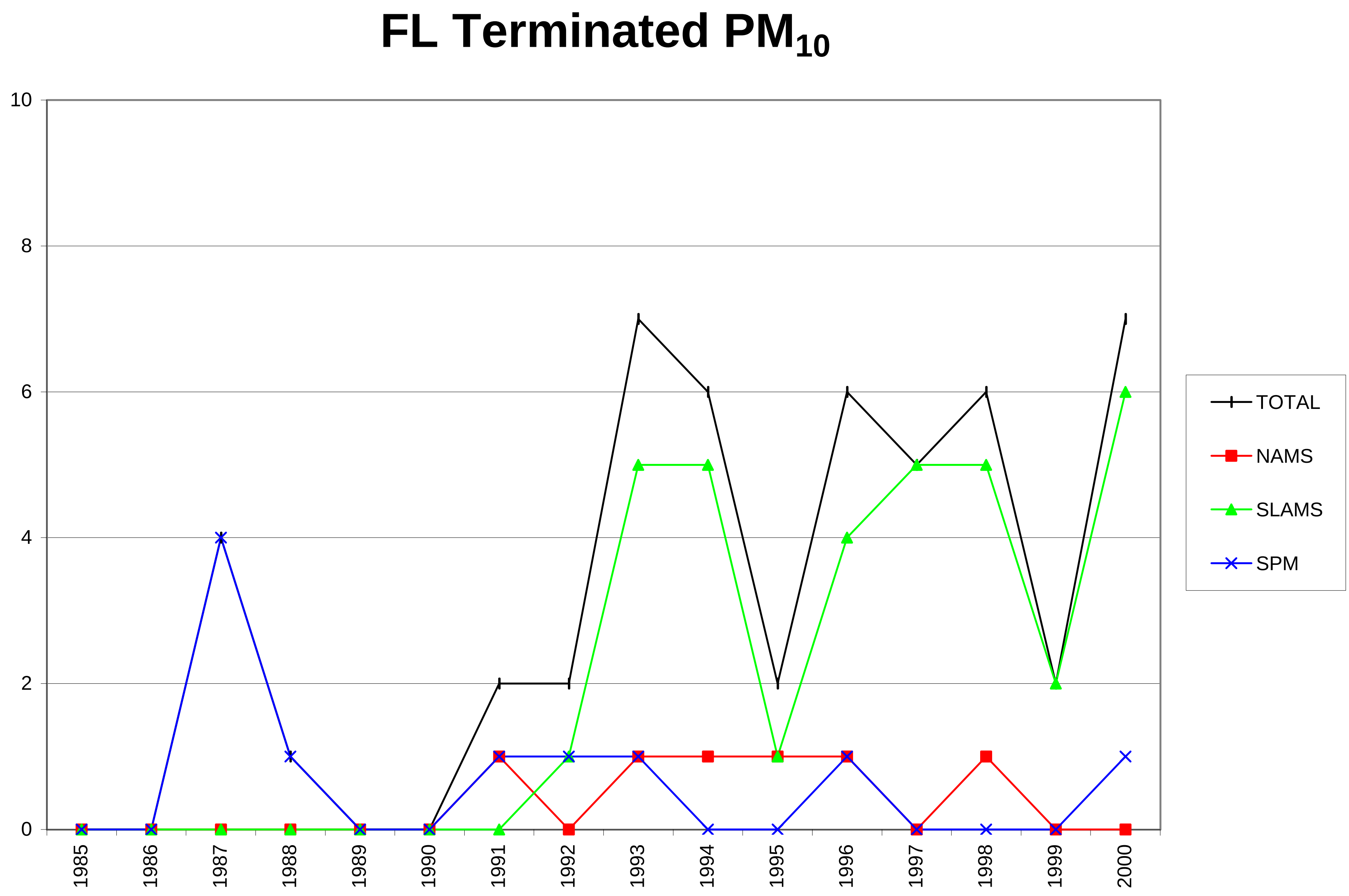


FL Terminated NO_2

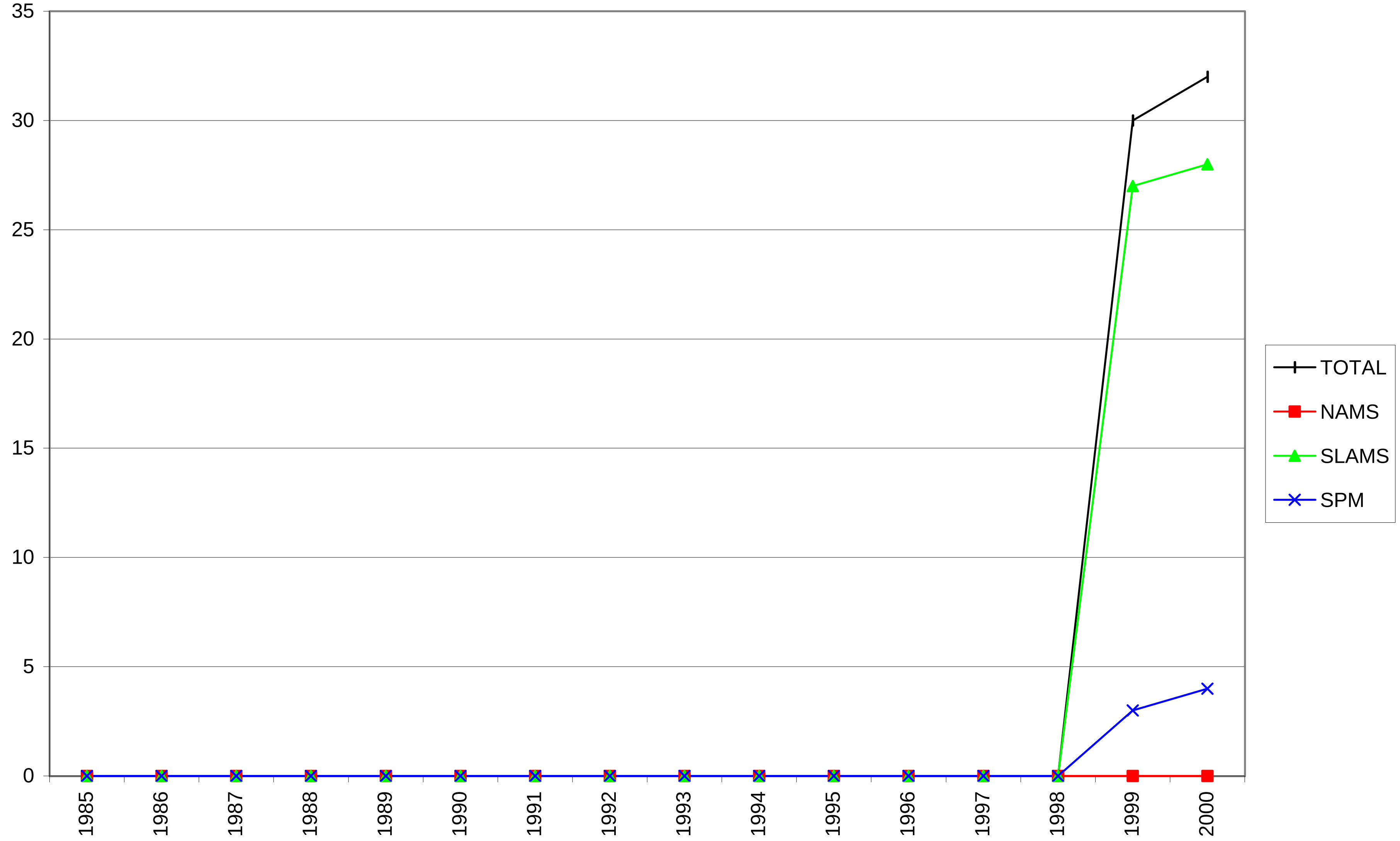


FL Active PM_{10}

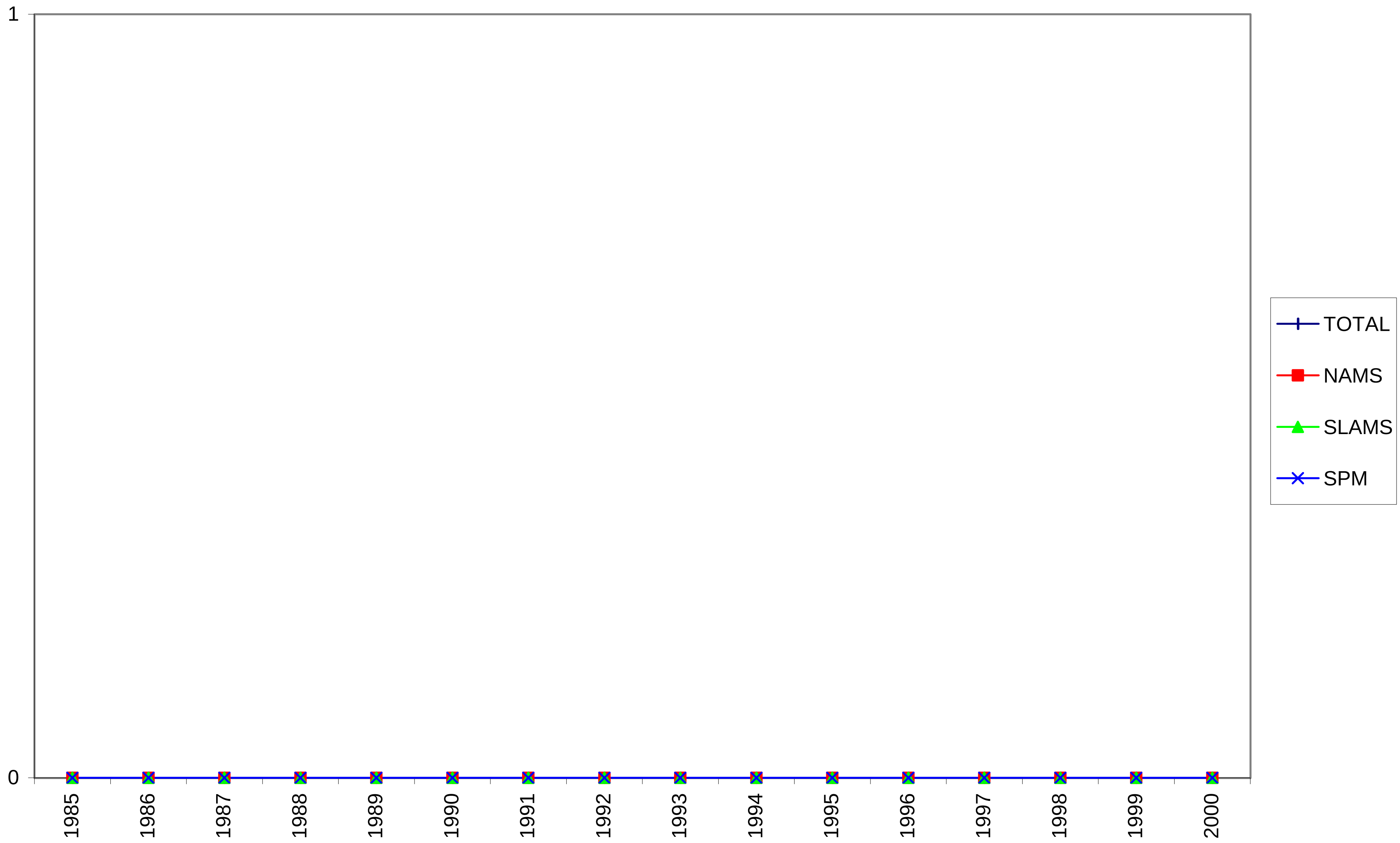



FL Terminated PM_{10}
10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

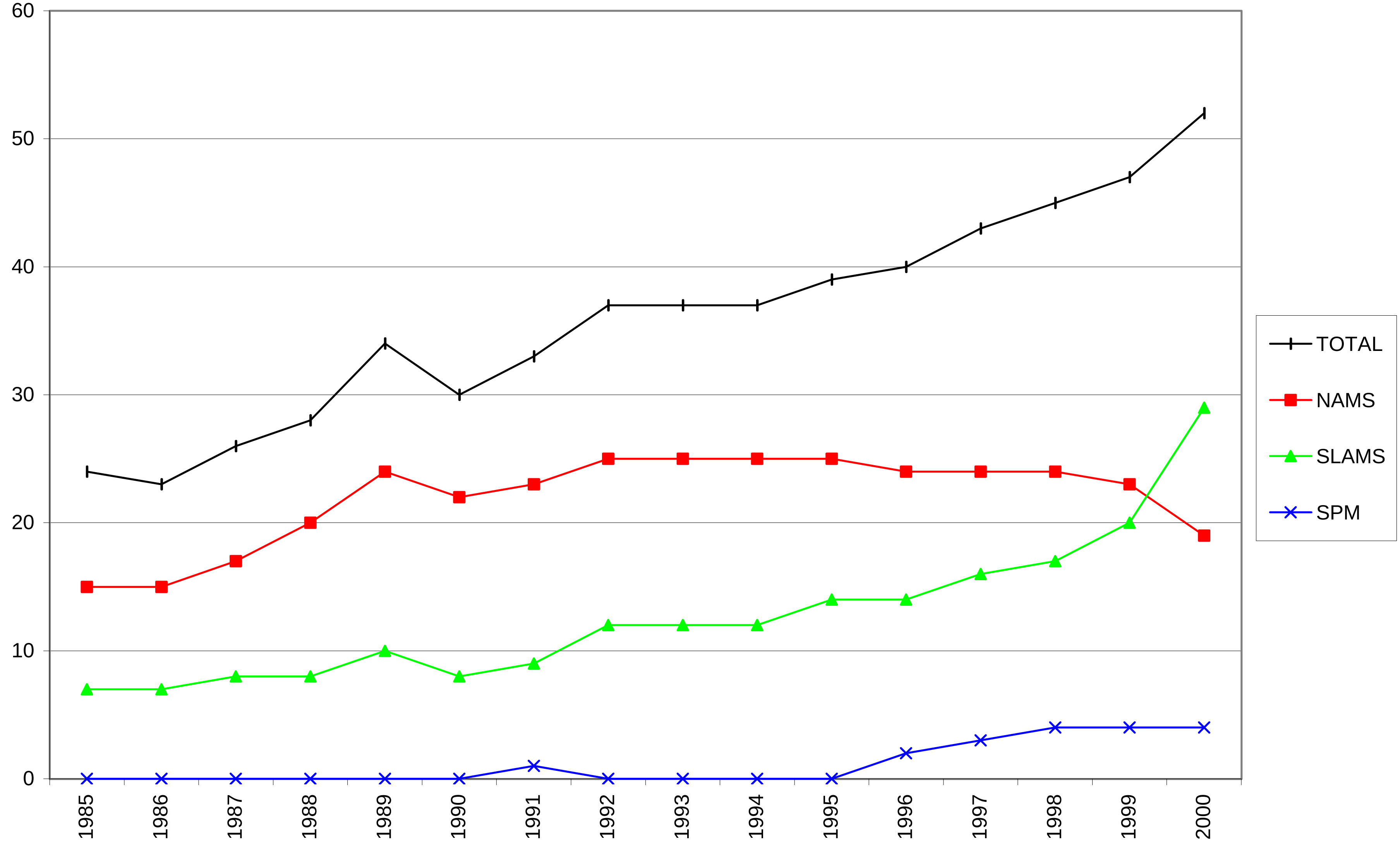
FL Active $PM_{2.5}$



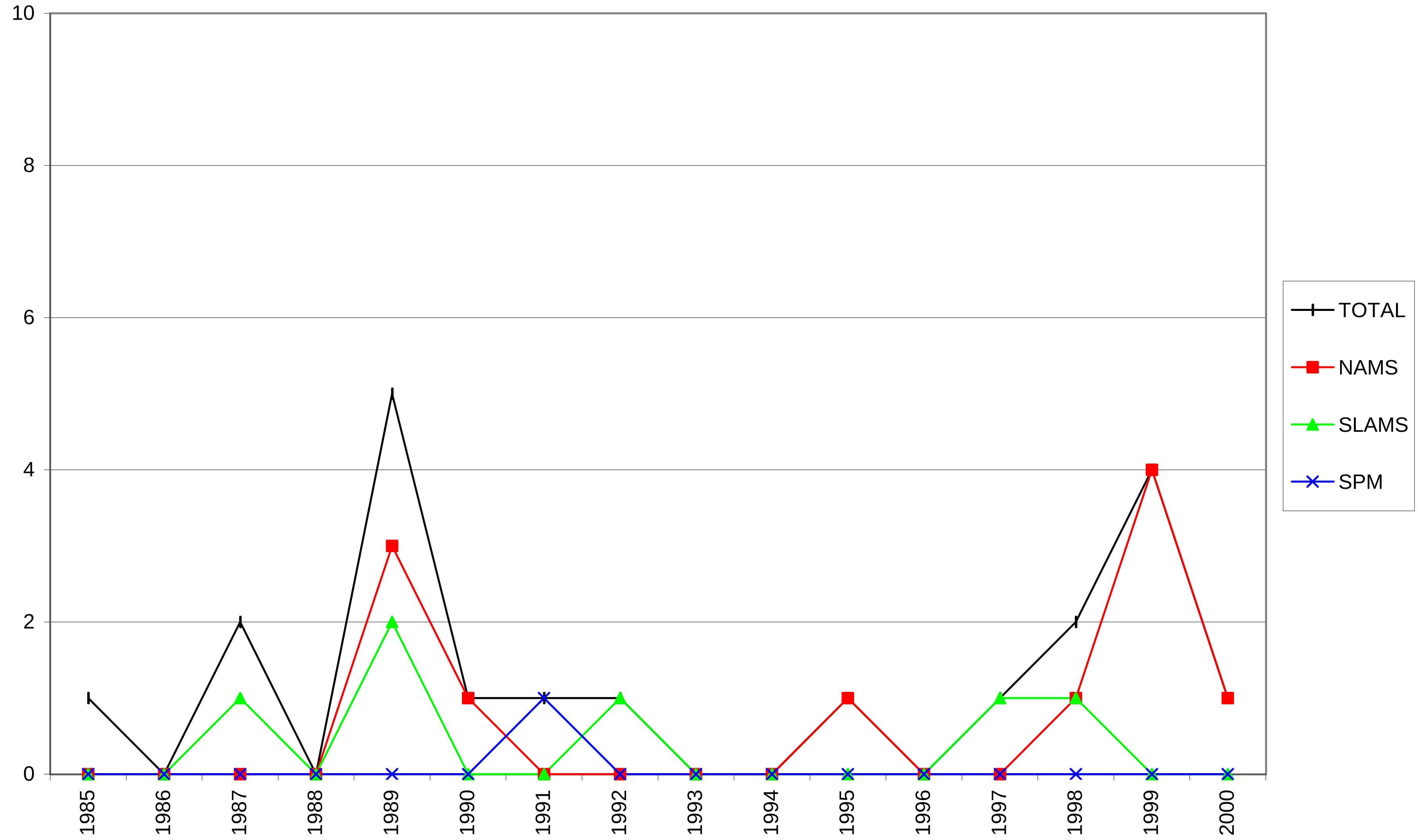
FL Terminated $PM_{2.5}$

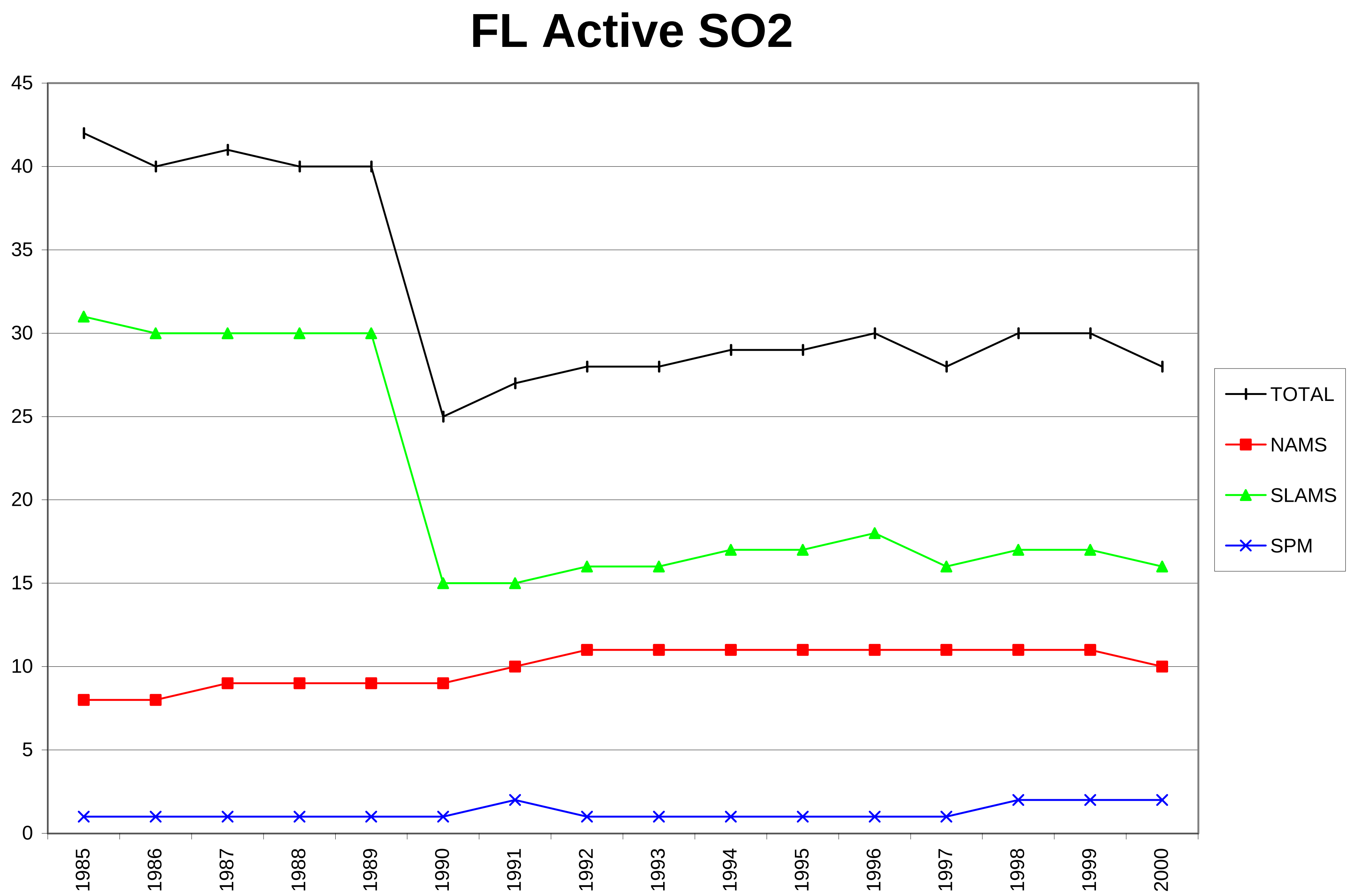


FL Active O3

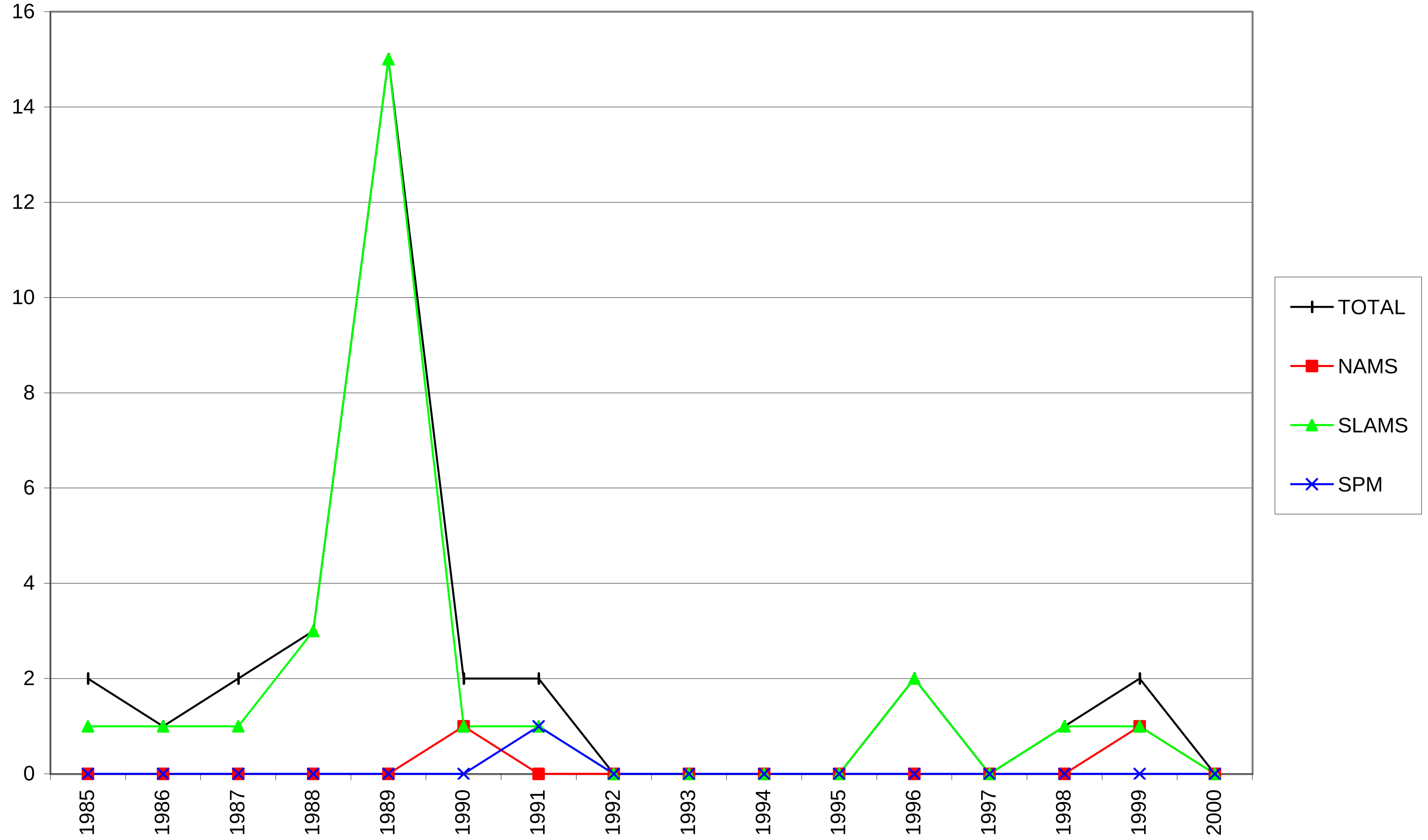

60
50
40
30
20
10
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

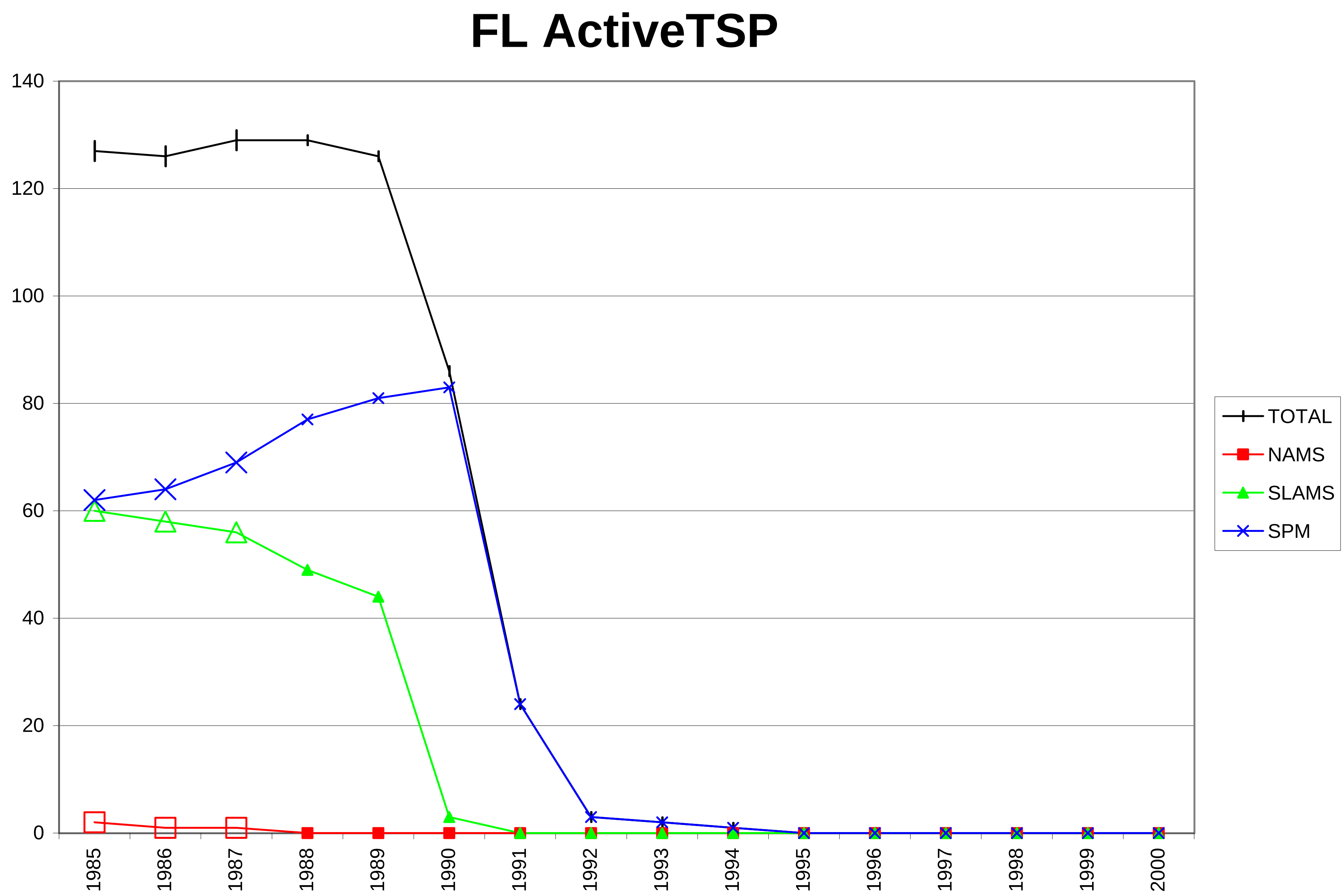
FL Terminated O_3

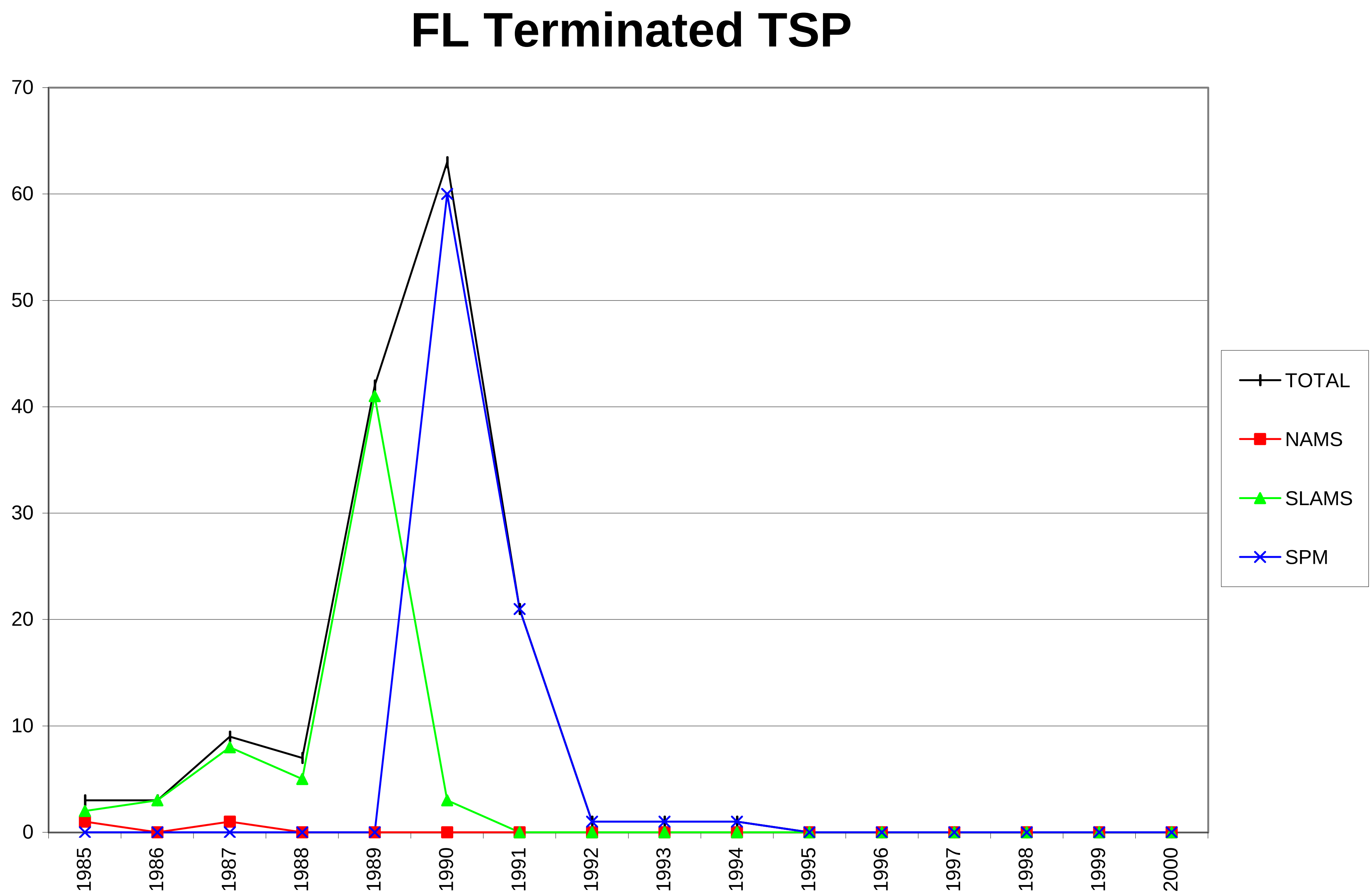


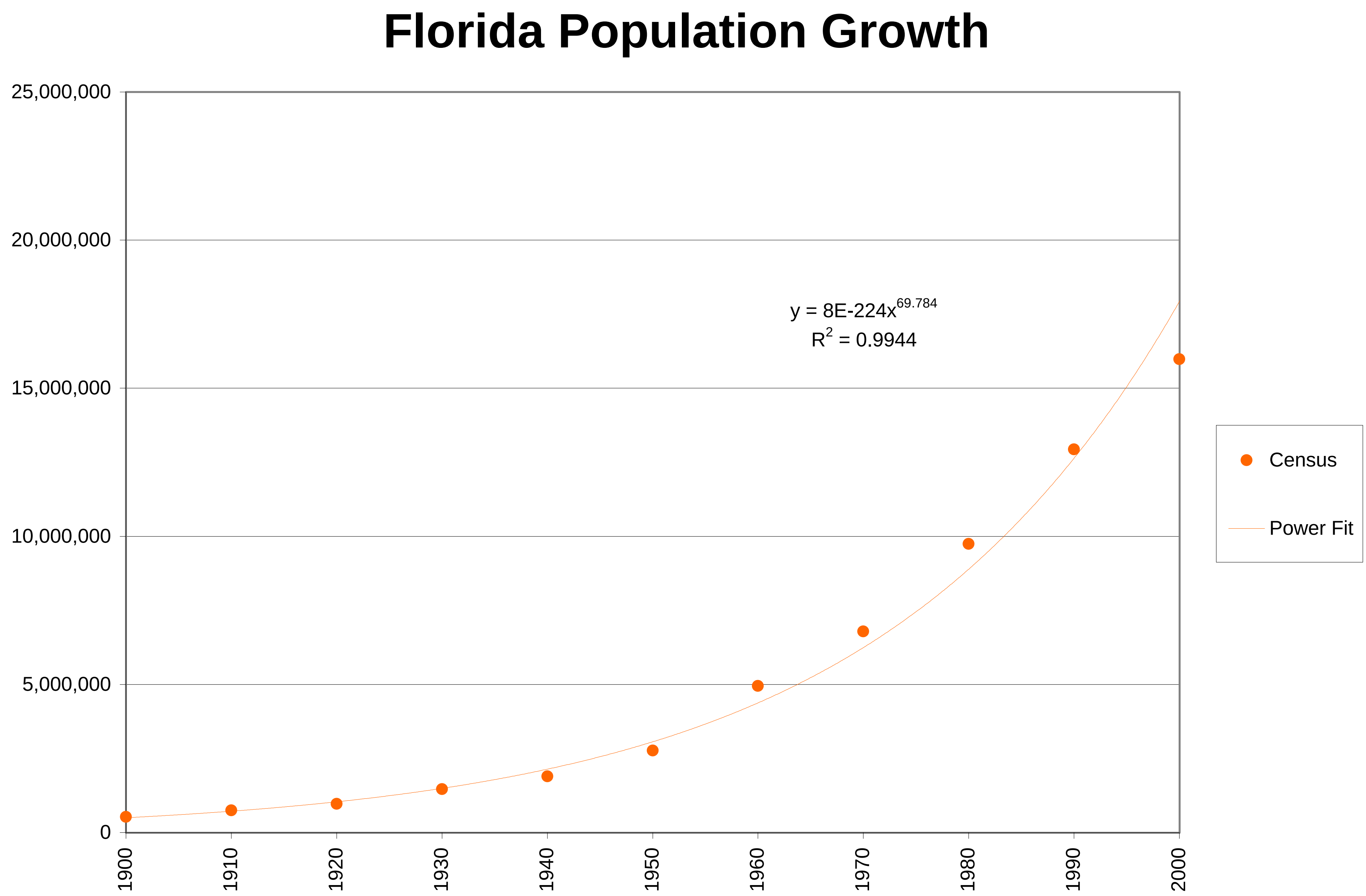

FL Active SO2
45
40
35
30
25
20
15
10
5
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

FL Terminated SO_2

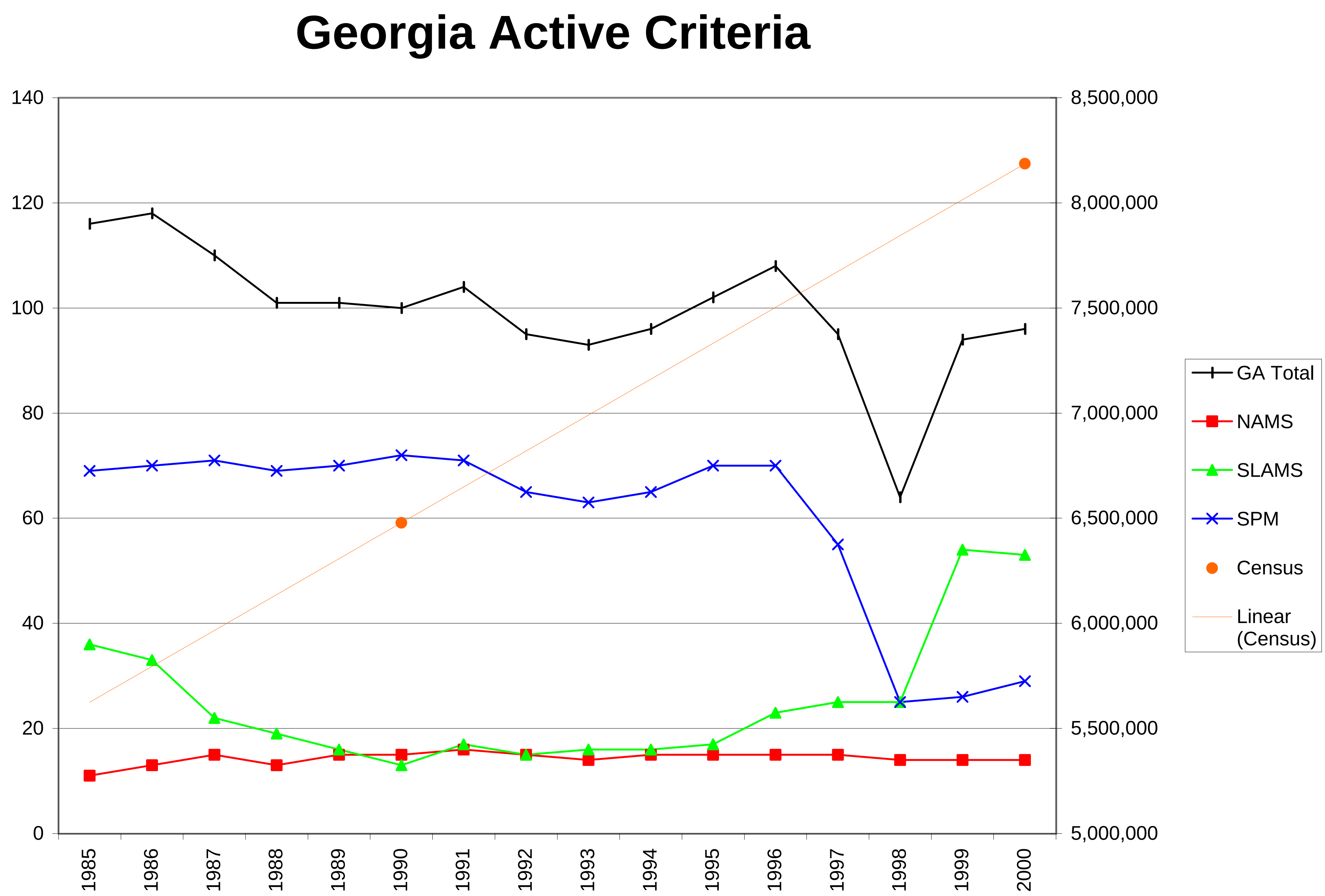



FL ActiveTSP
140
120
100
80
60
40
20
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

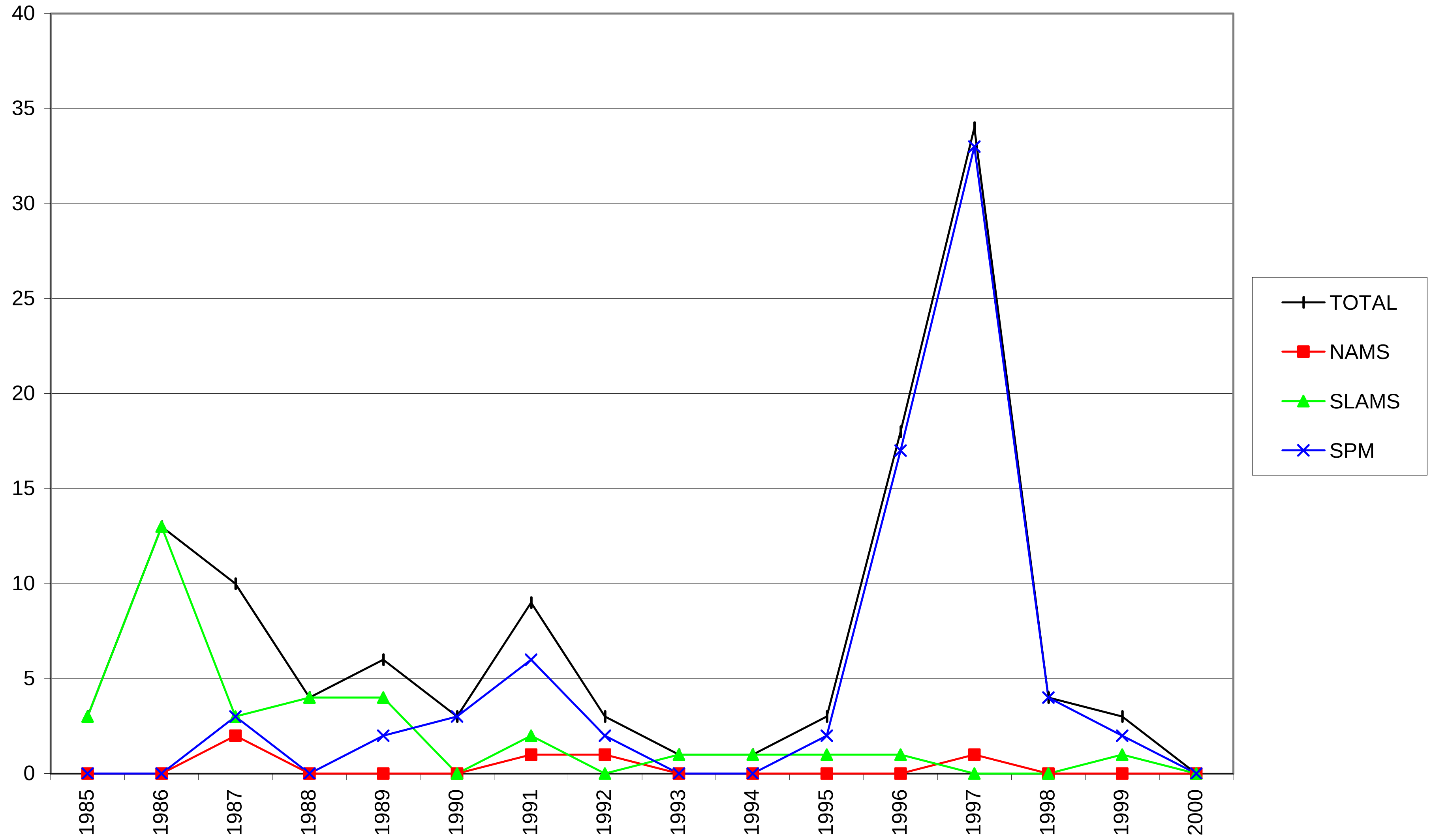

FL Terminated TSP
70
60
50
40
30
20
10
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

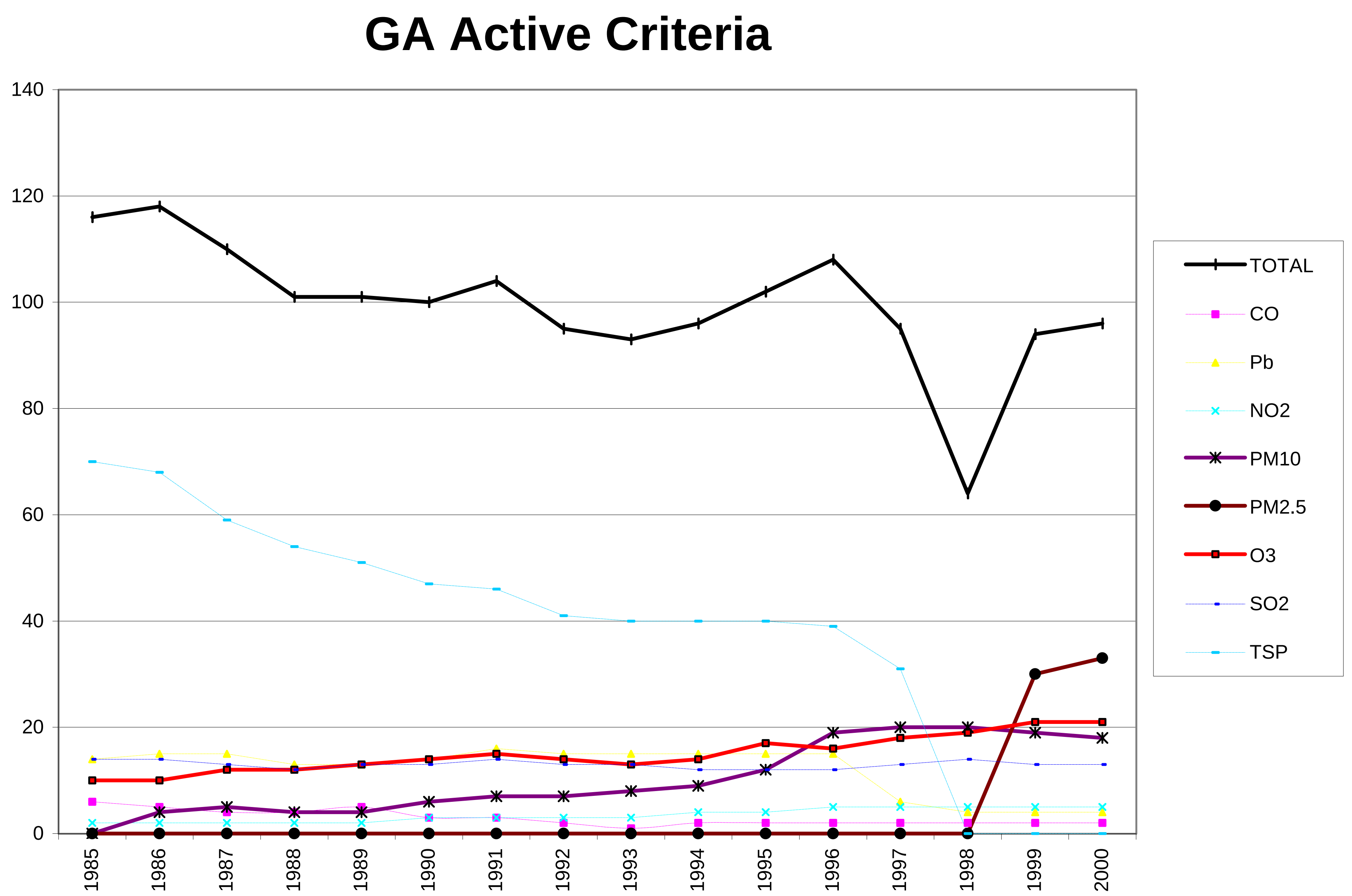


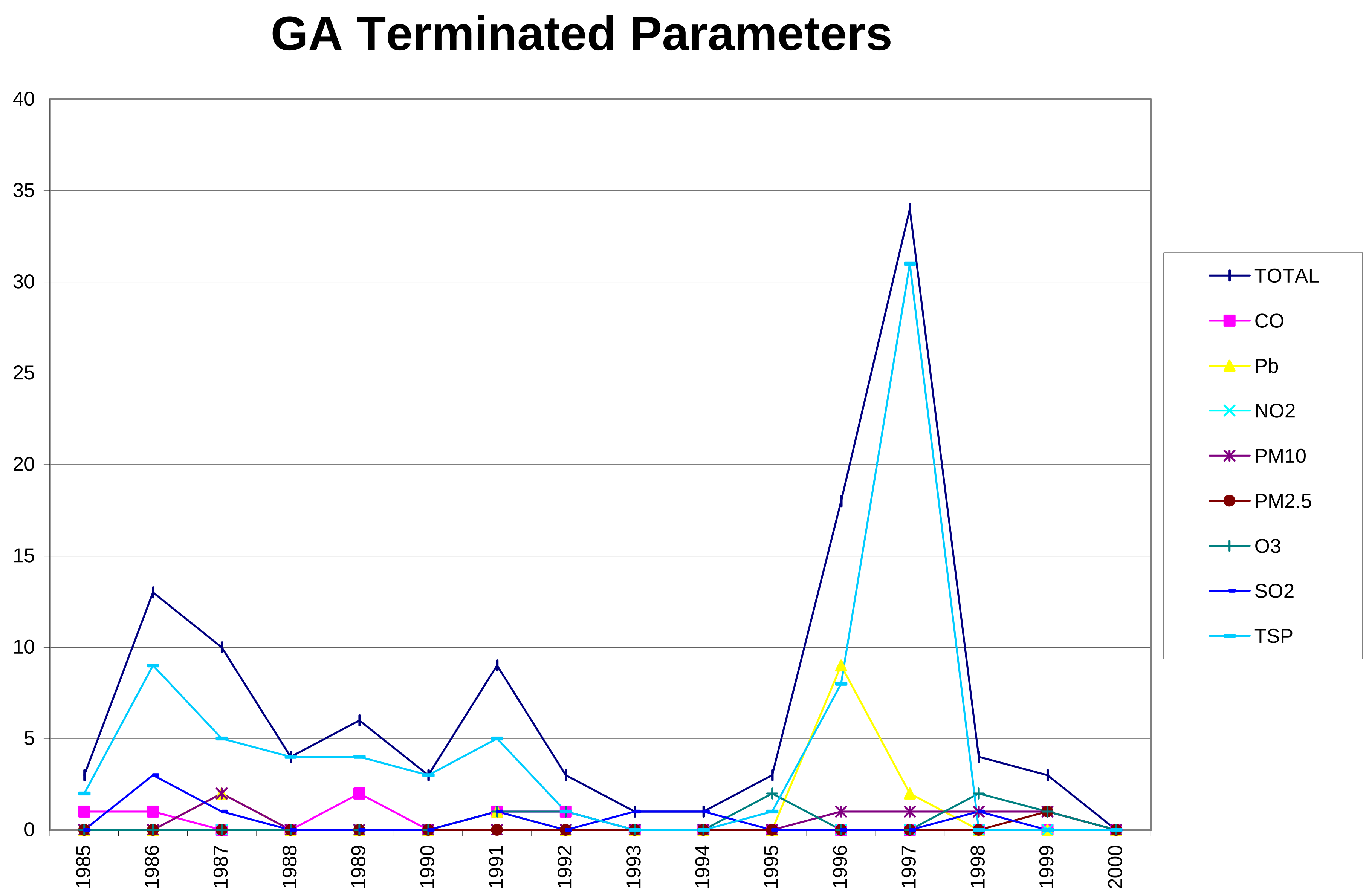
Florida Population Growth
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
y = 8E-224x^69.784
R^2 = 0.9944
Census
Power Fit


Georgia Active Criteria
140
120
100
80
60
40
20
0
8,500,000
8,000,000
7,500,000
7,000,000
6,500,000
6,000,000
5,500,000
5,000,000
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
GA Total
NAMS
SLAMS
SPM
Census
Linear (Census)

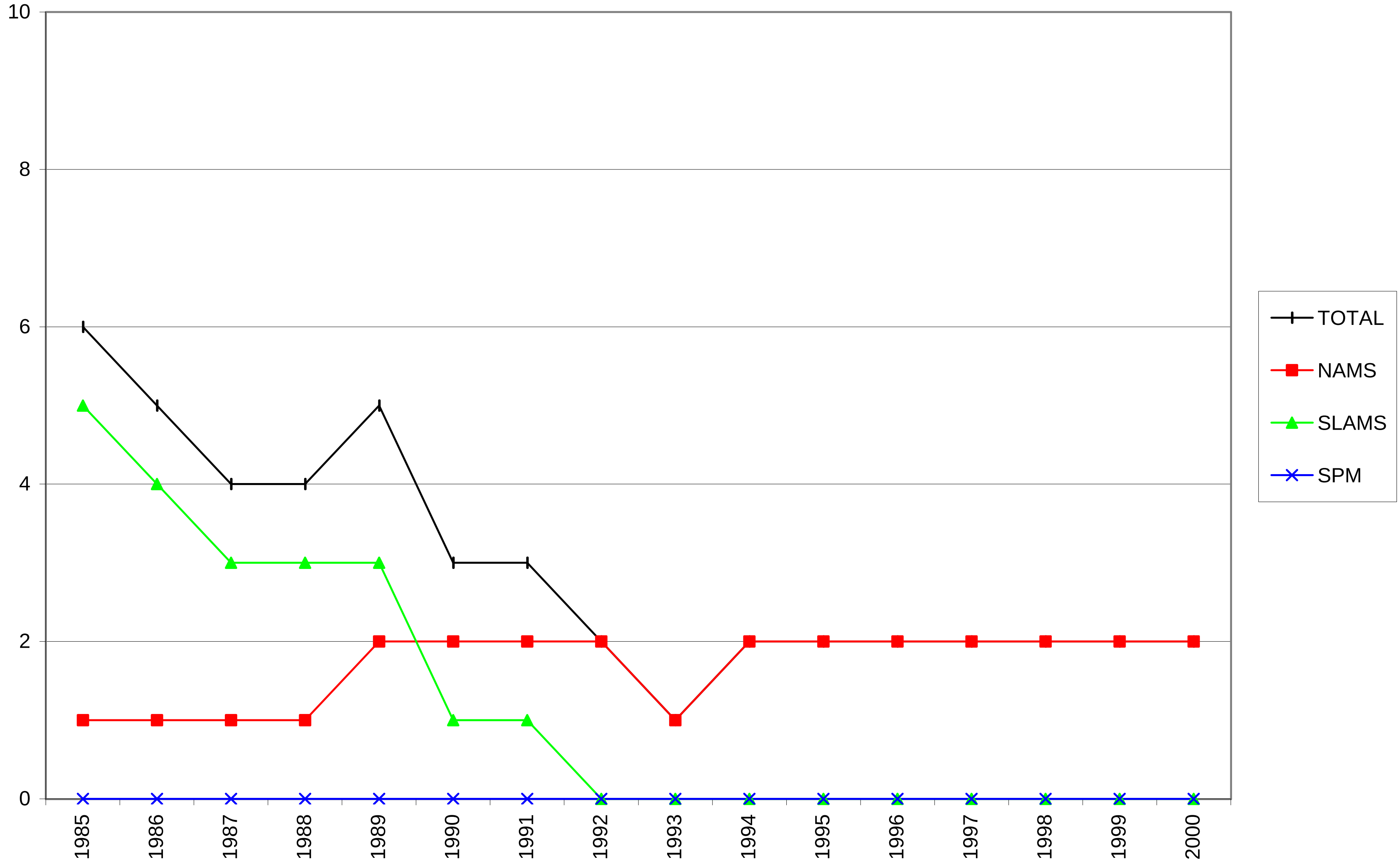
GA Terminated Parameters



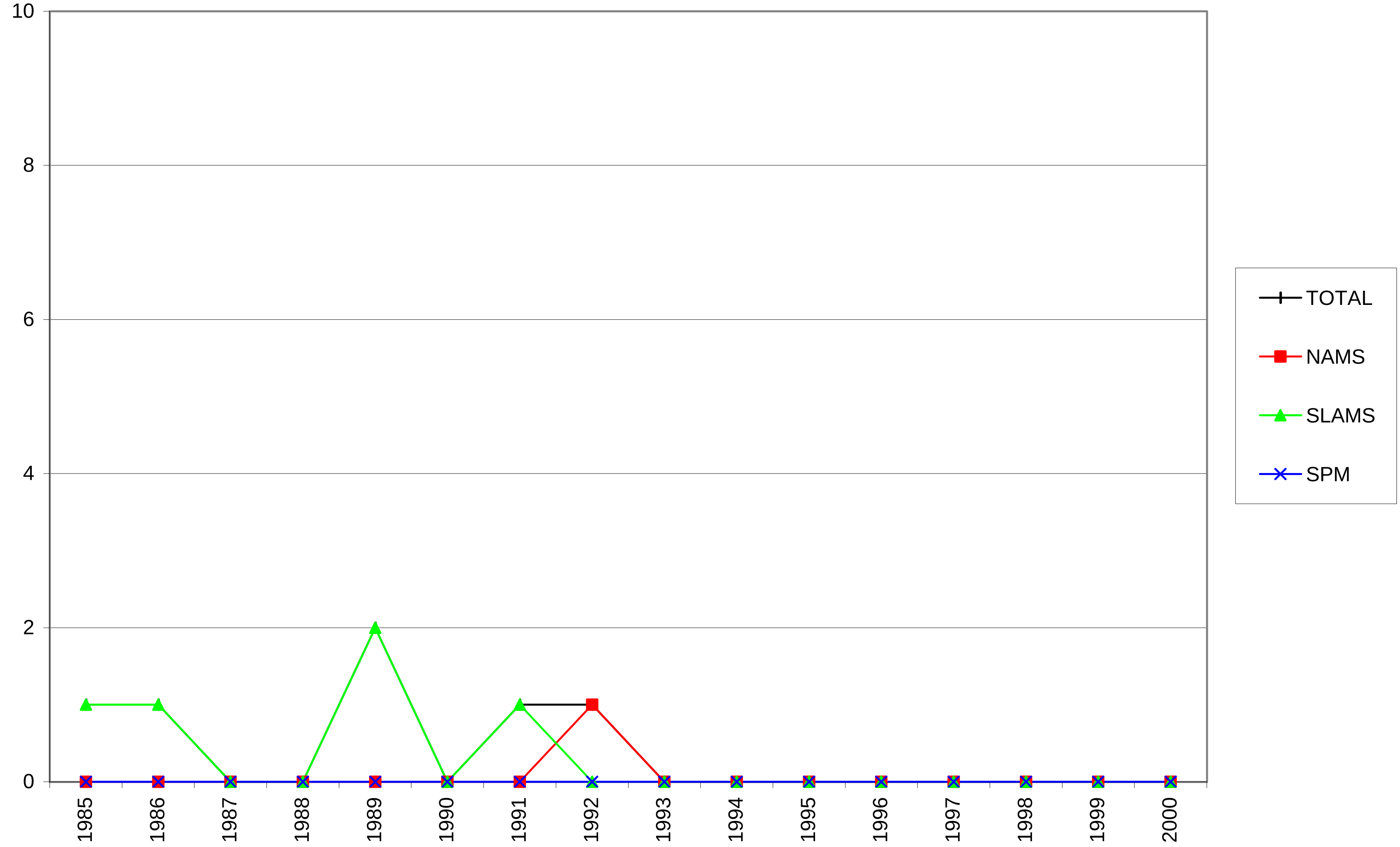

GA Active Criteria
140
120
100
80
60
40
20
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
CO
Pb
NO2
PM10
PM2.5
O3
SO2
TSP


GA Terminated Parameters
40
35
30
25
20
15
10
5
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
CO
Pb
NO2
PM10
PM2.5
O3
SO2
TSP

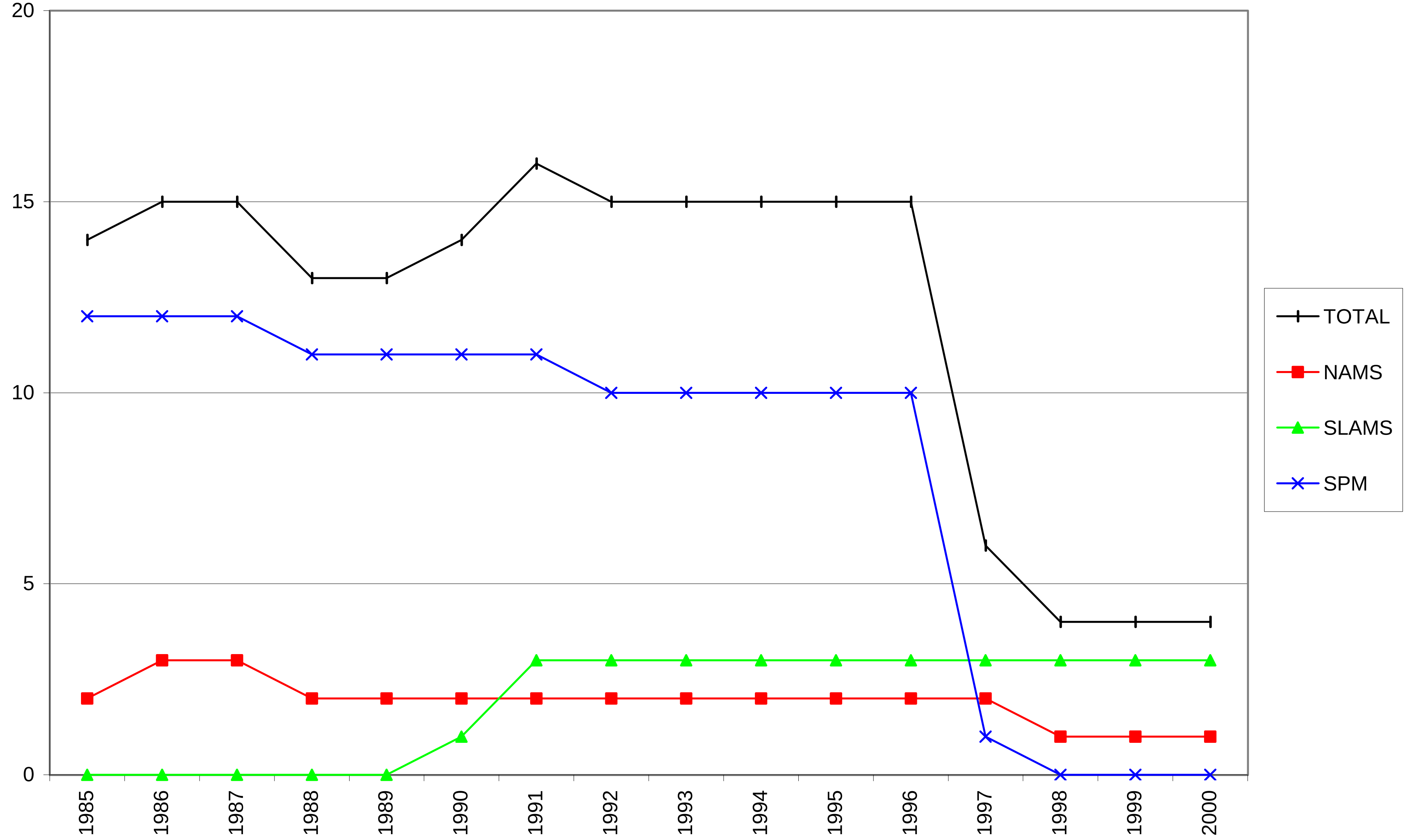
GA Active CO


10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

GA Terminated CO

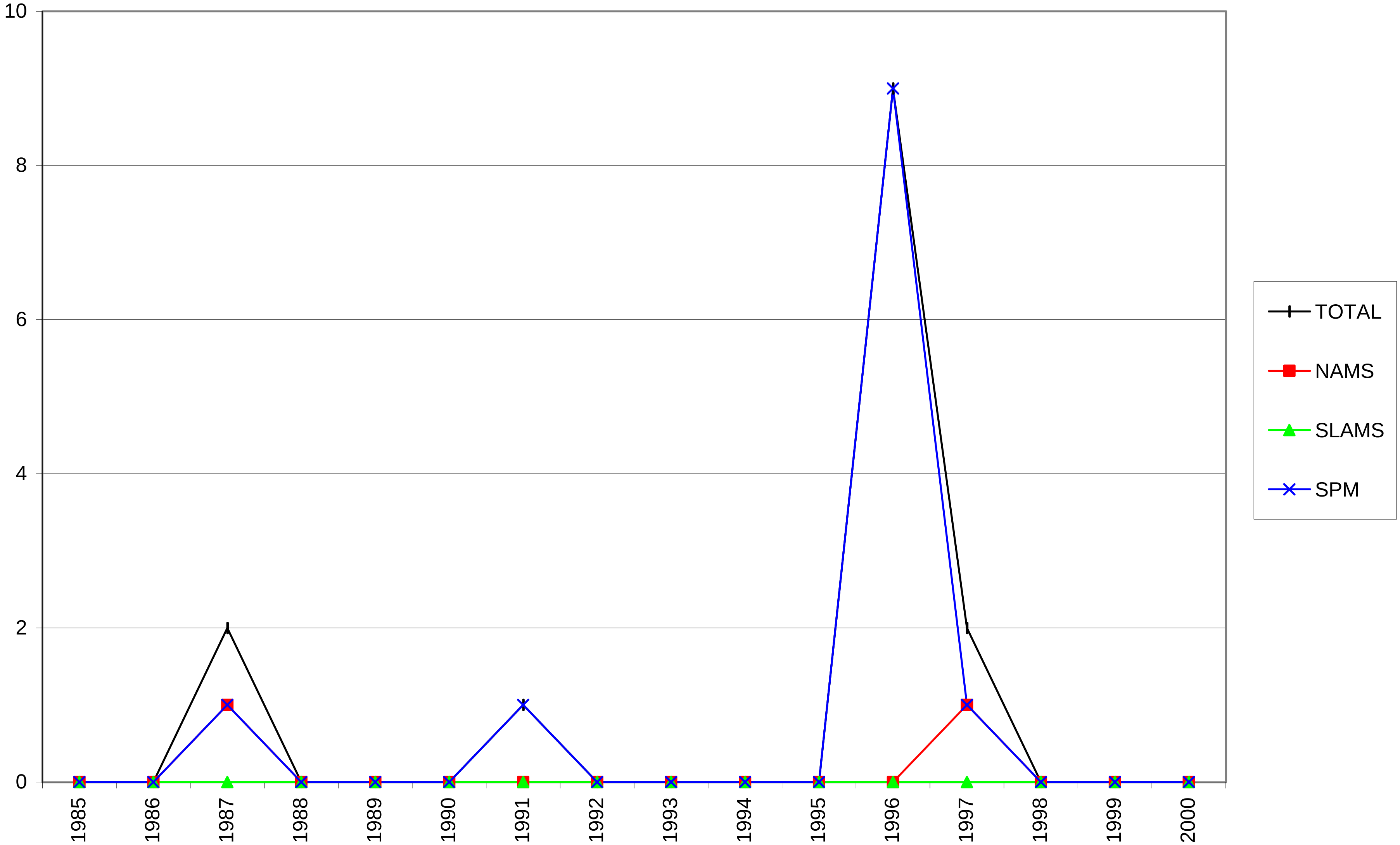


GA Active Pb

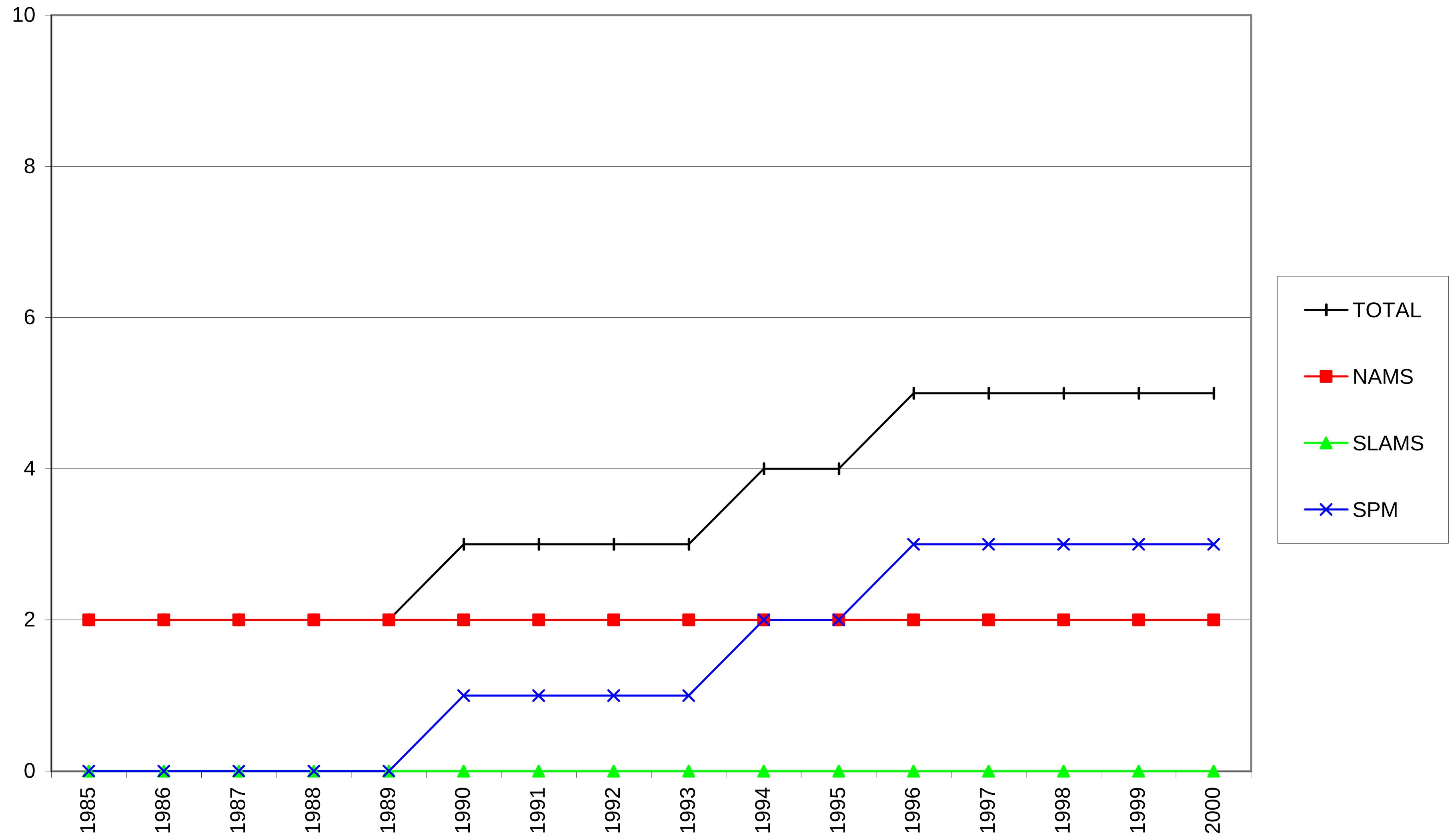


20
15
10
5
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

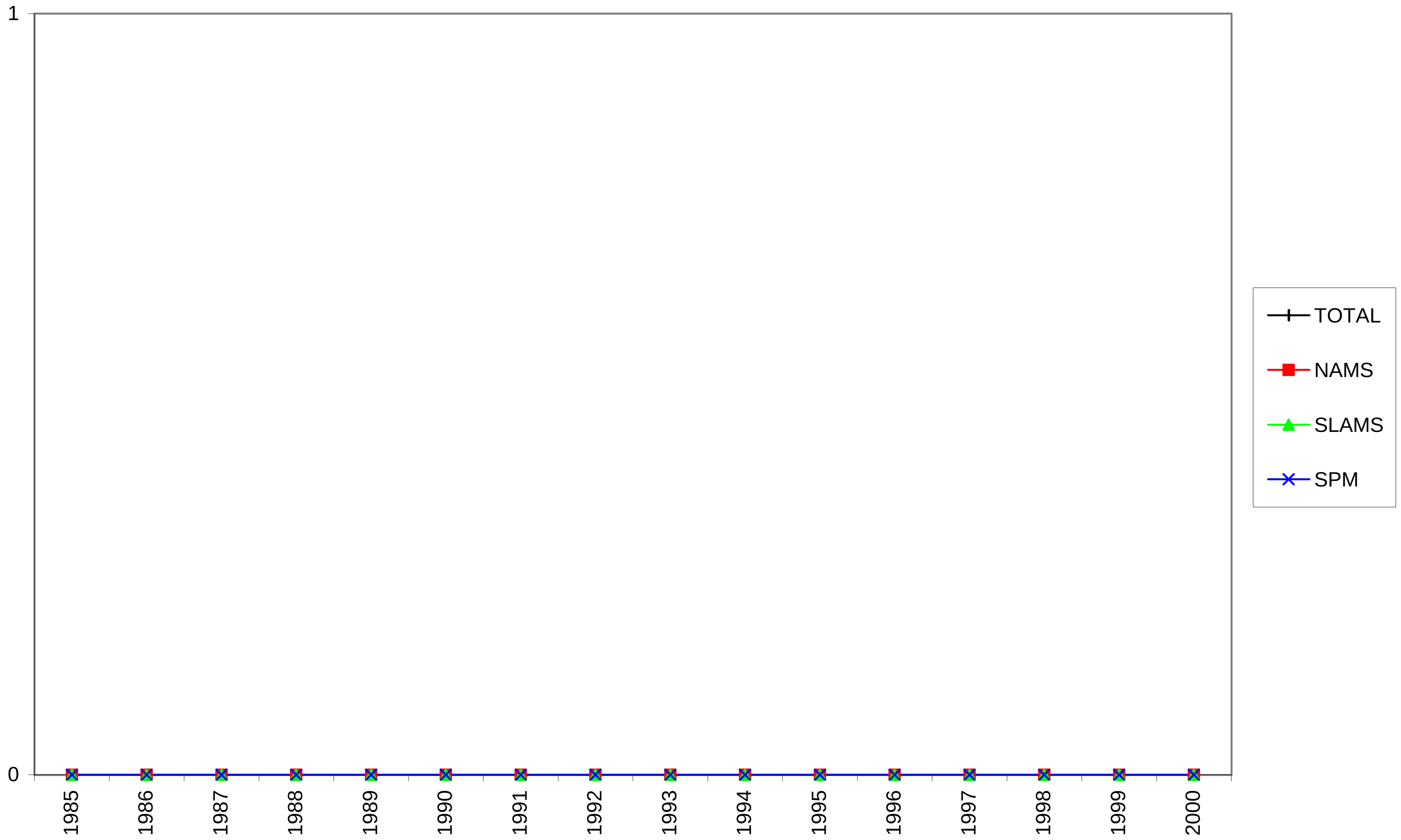
GA Terminated Pb



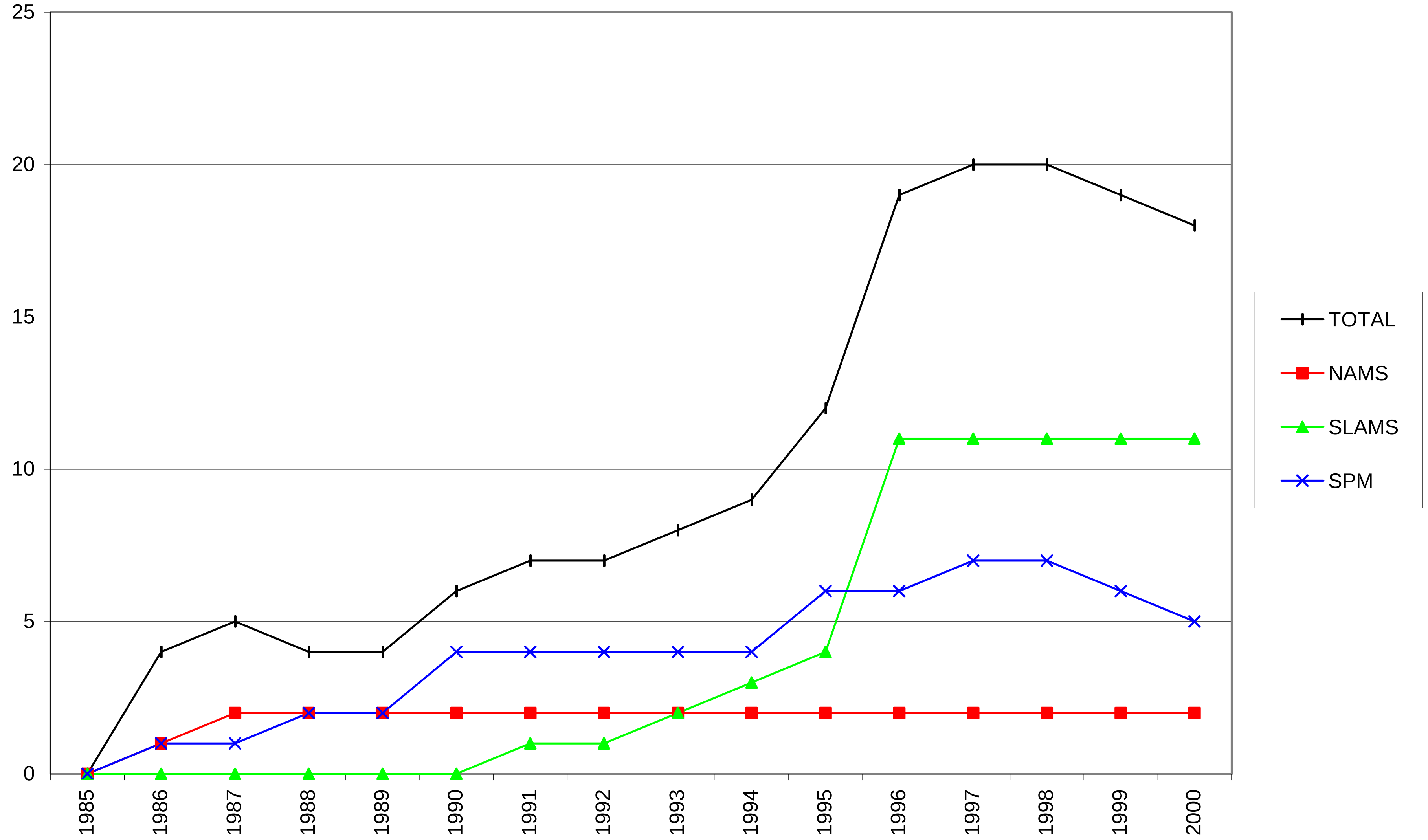
GA Active NO_2

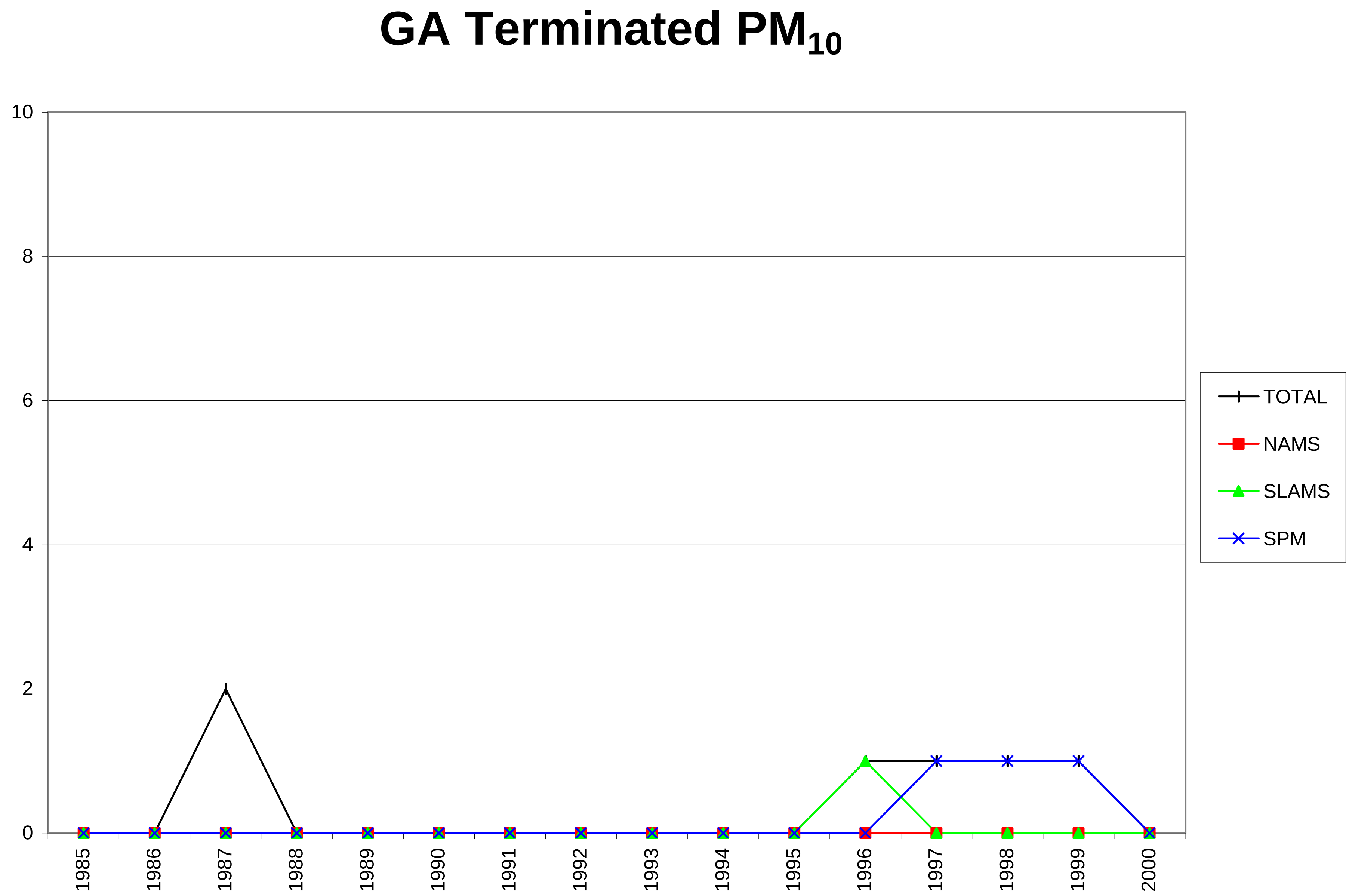


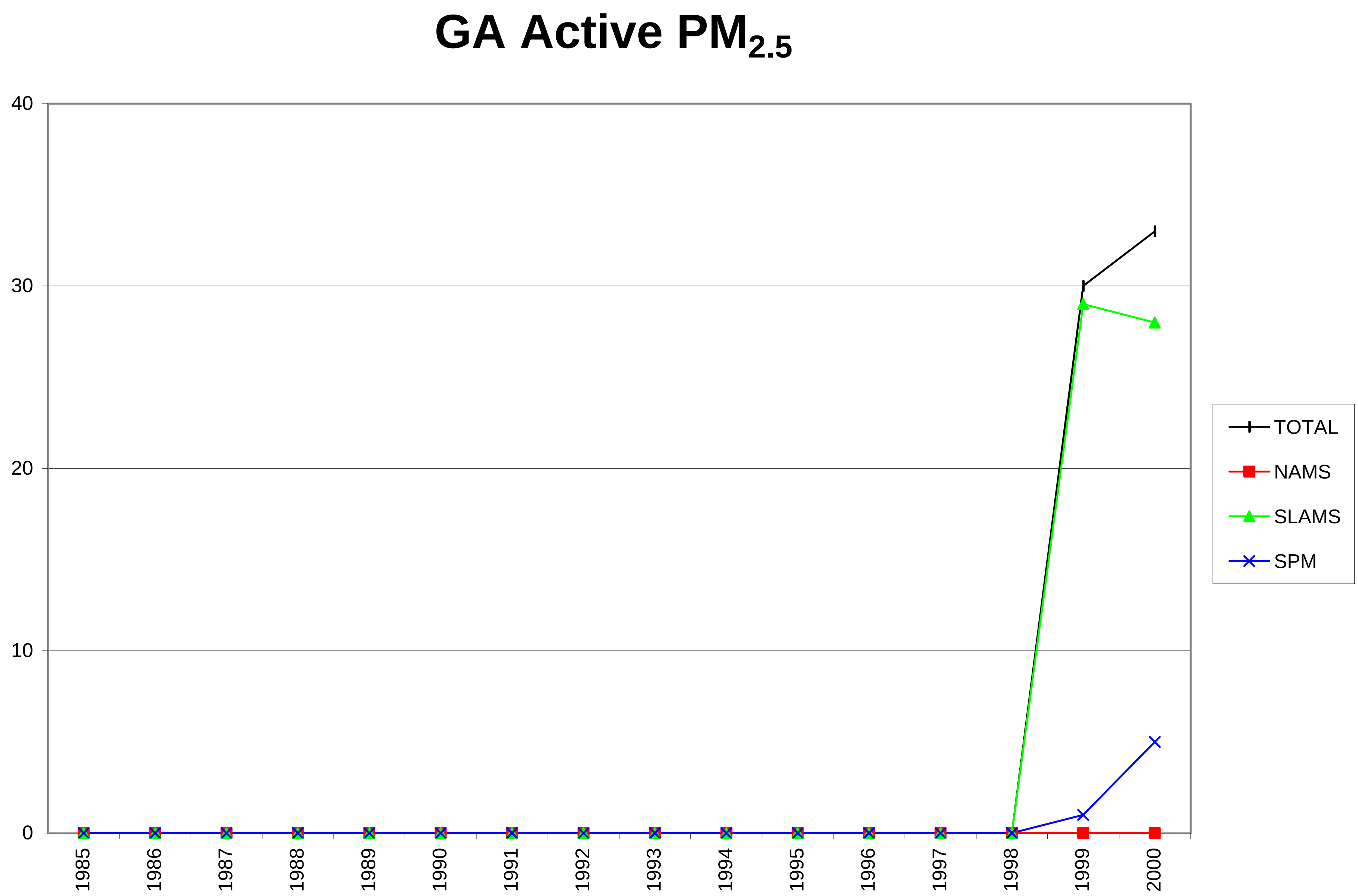
GA Terminated NO_2



GA Active PM_{10}

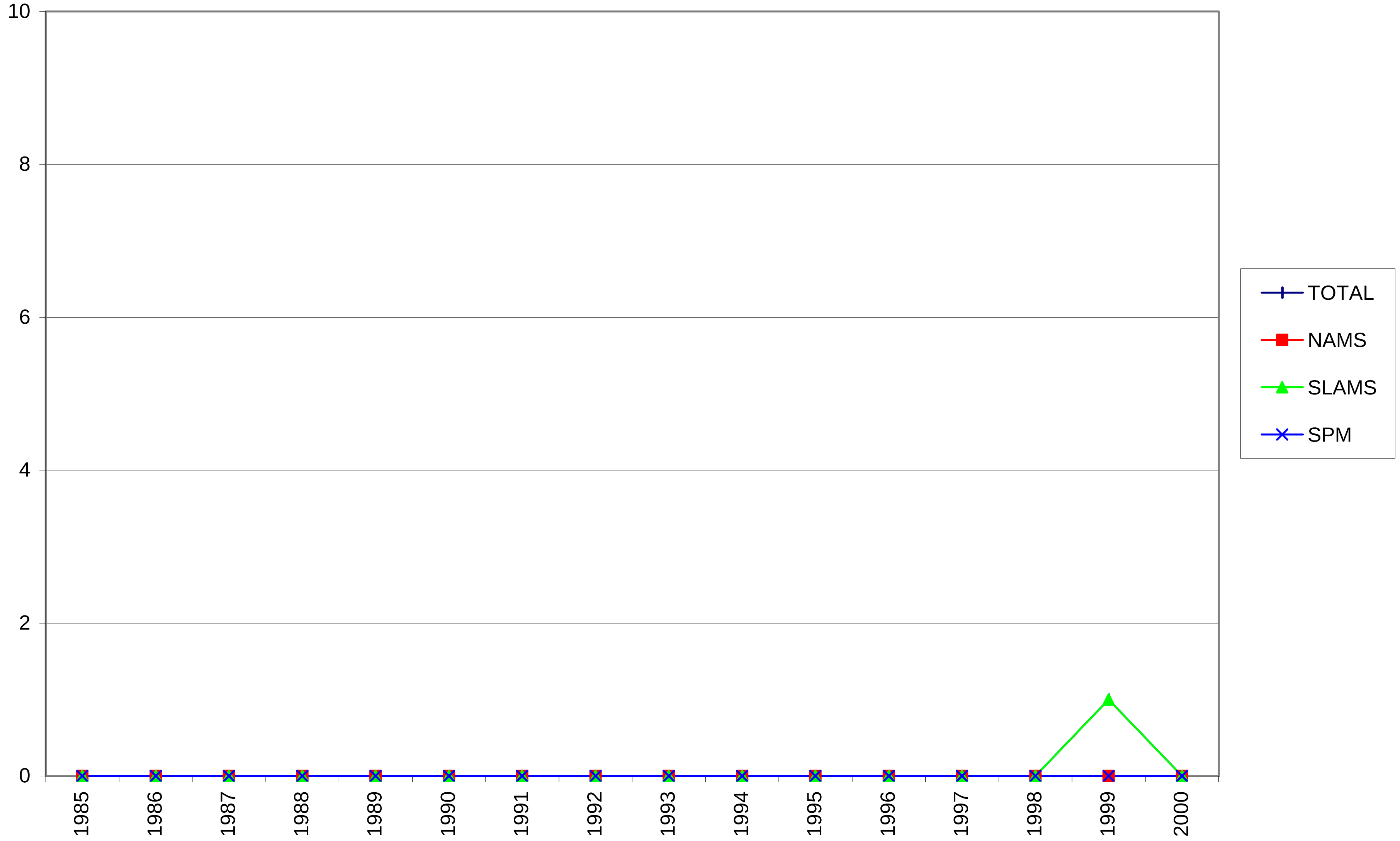



GA Terminated PM10
10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

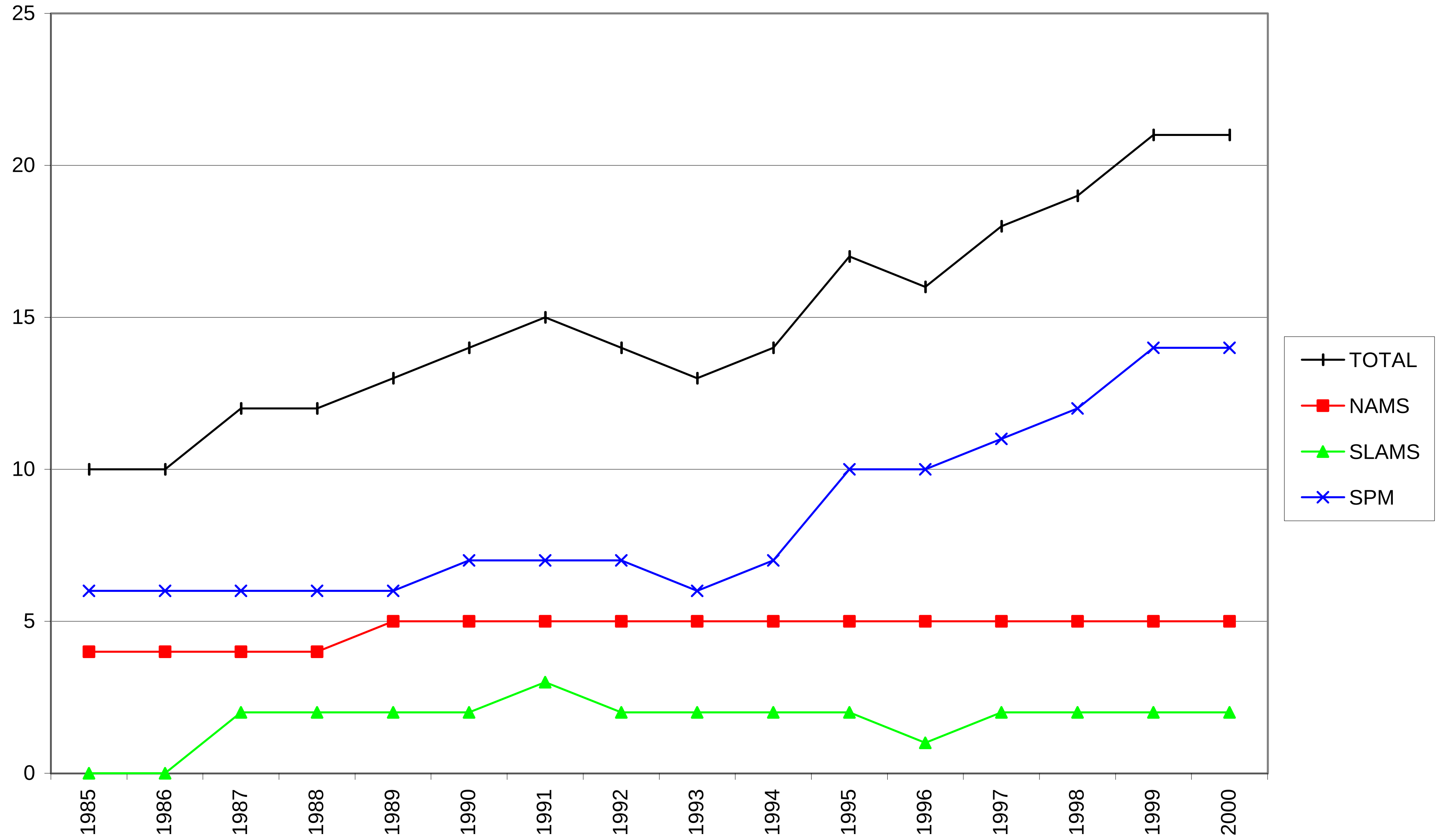


GA Active $PM_{2.5}$
40
30
20
10
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

GA Terminated $PM_{2.5}$

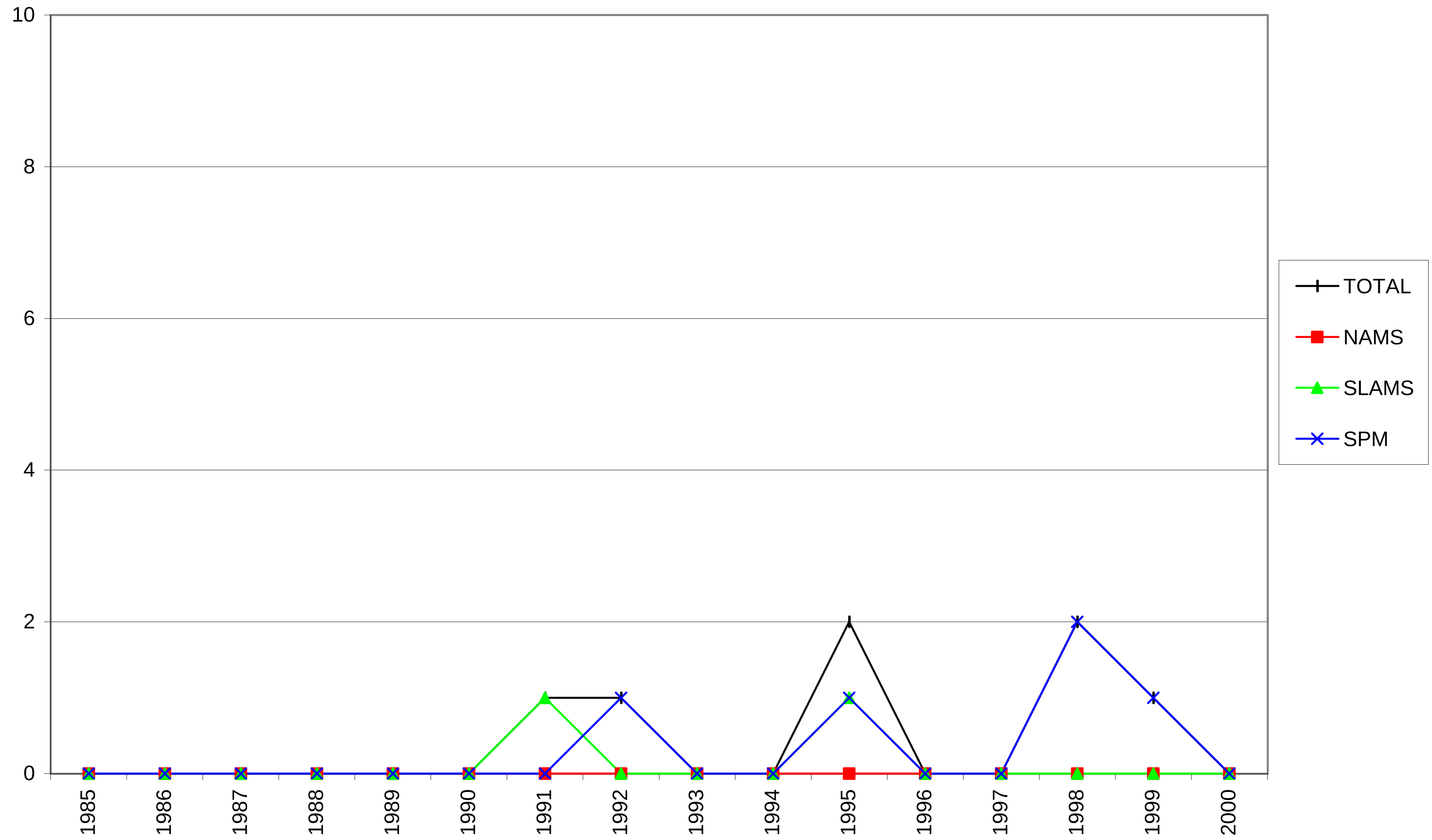


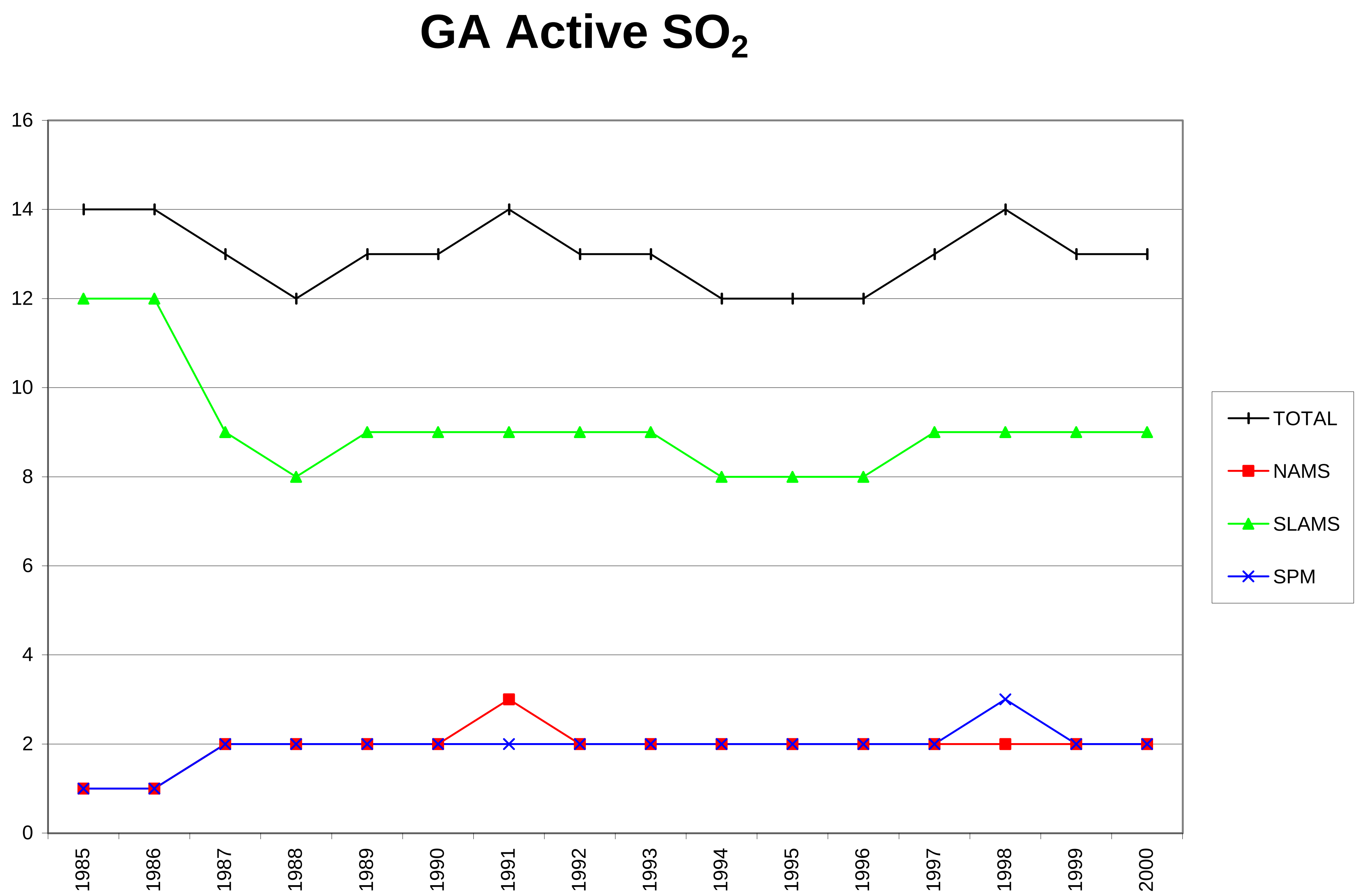
GA Active O_3



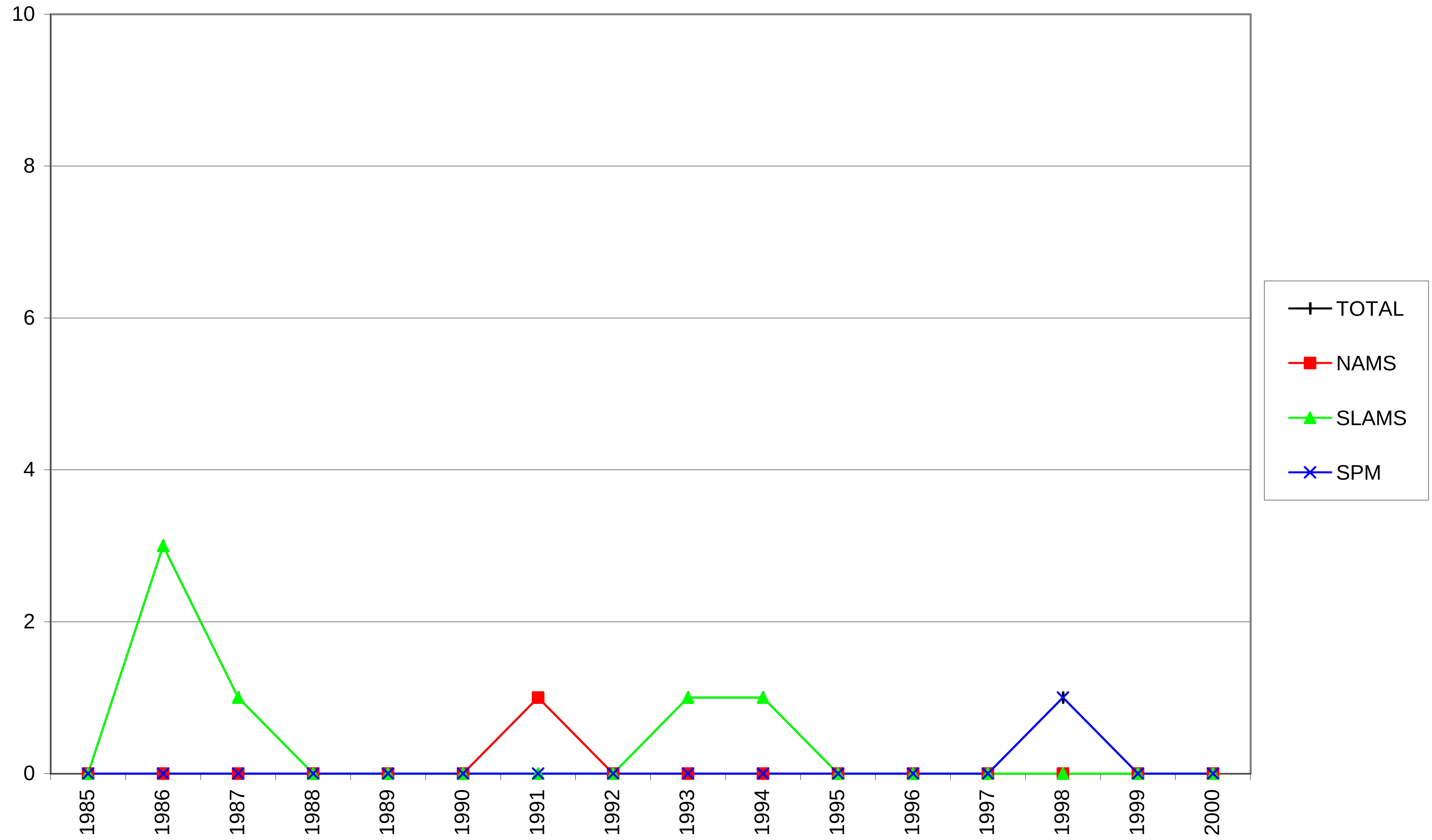
25
20
15
10
5
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

GA Terminated O_3

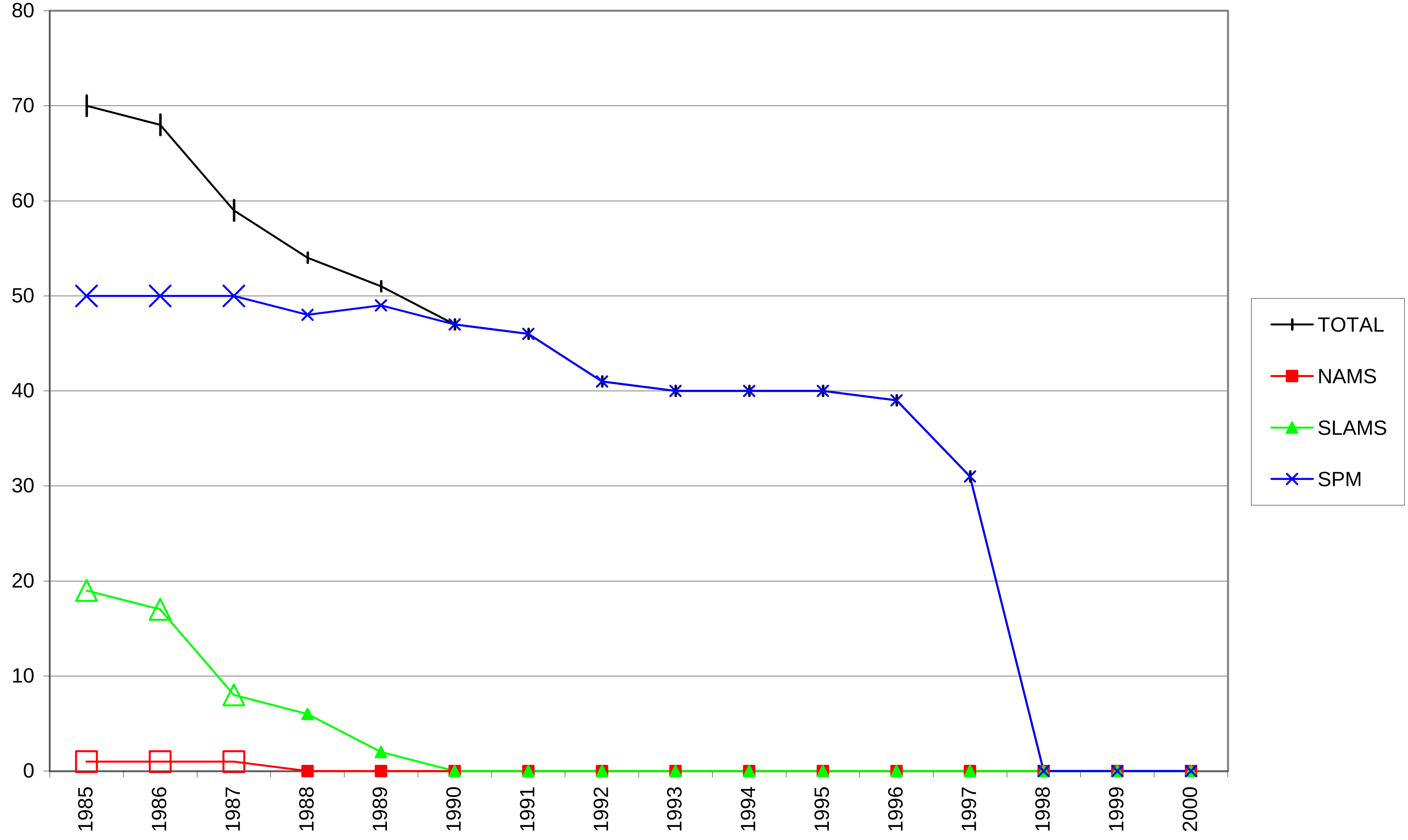



GA Active SO_2
16
14
12
10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

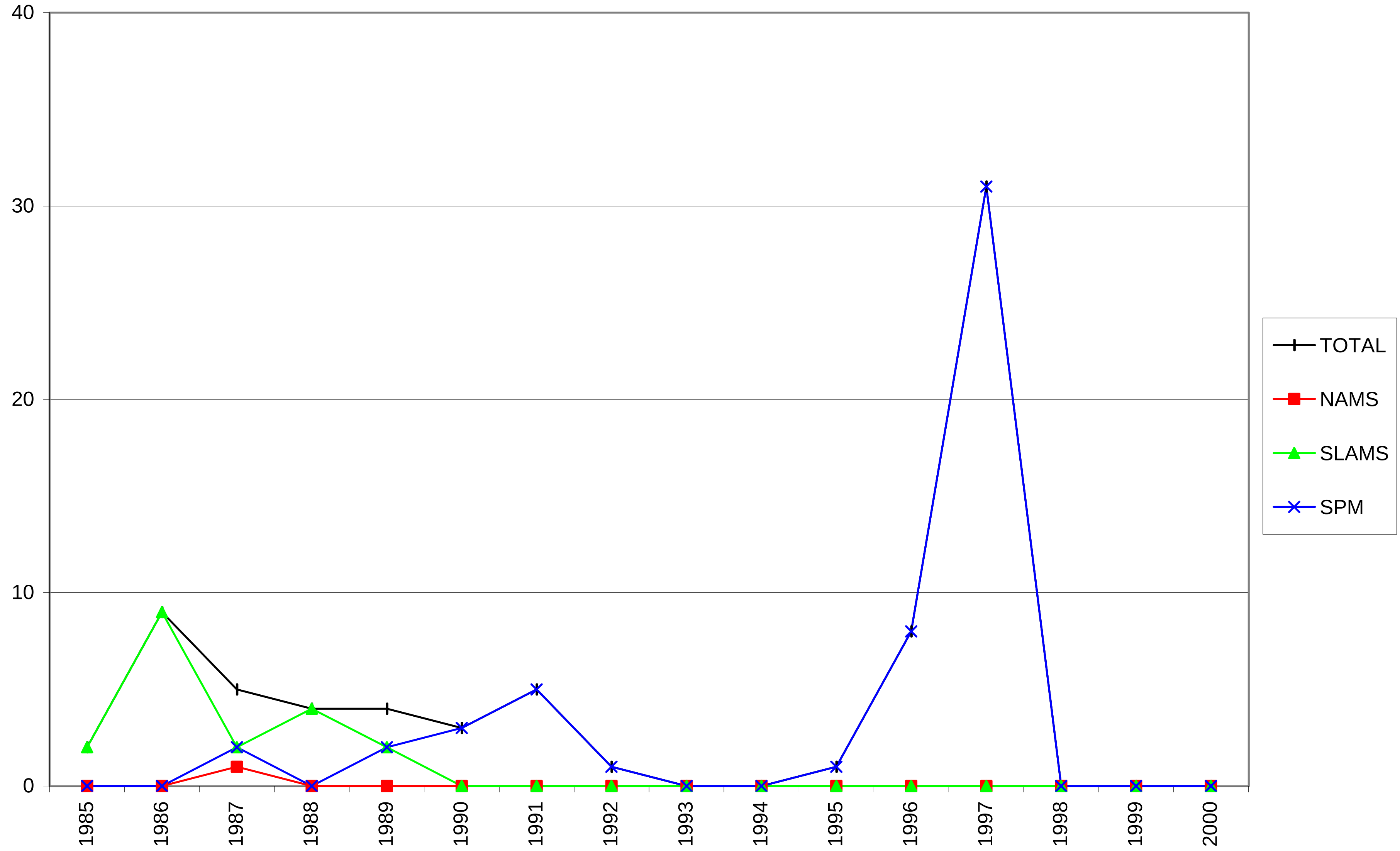
GA Terminated SO_2

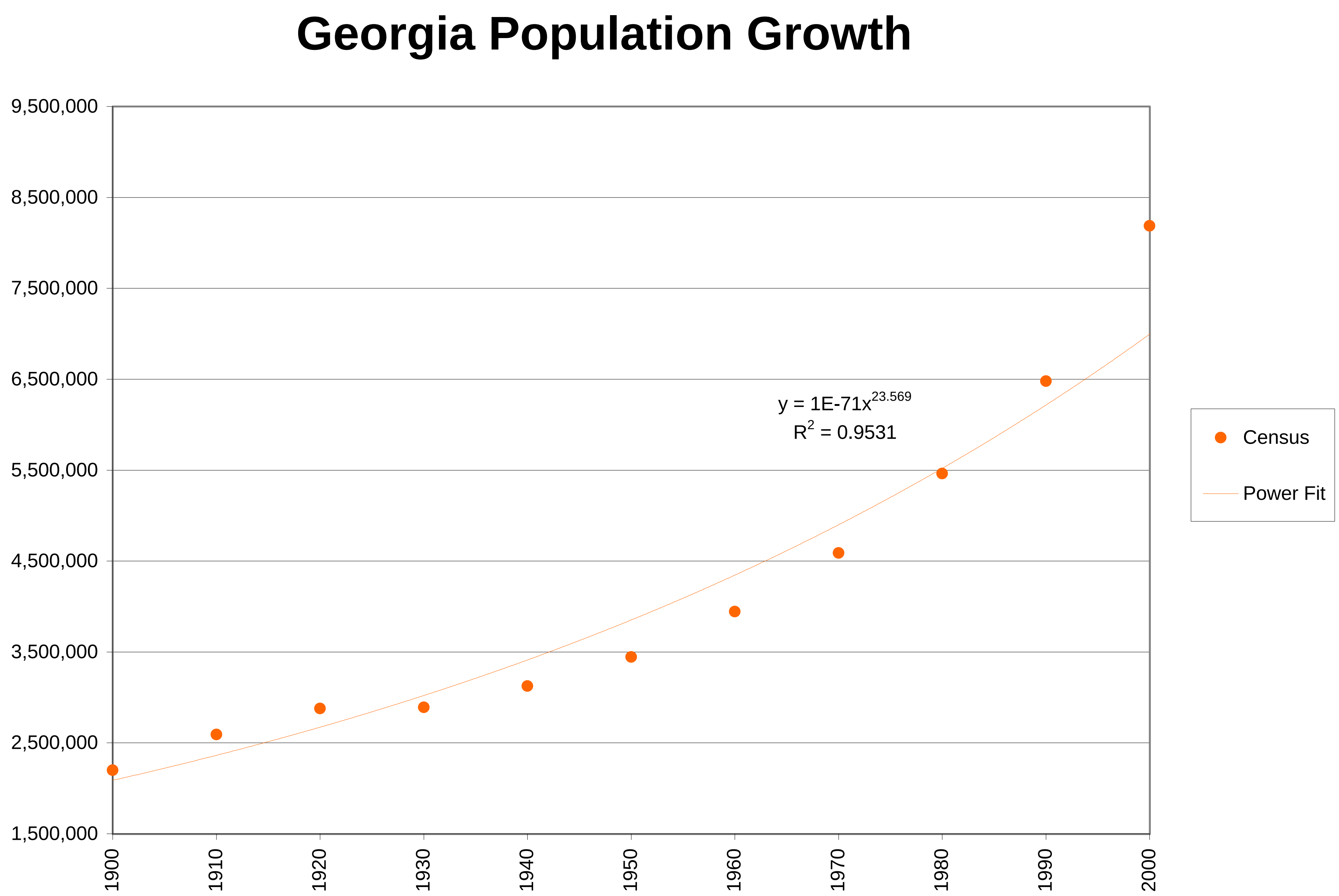


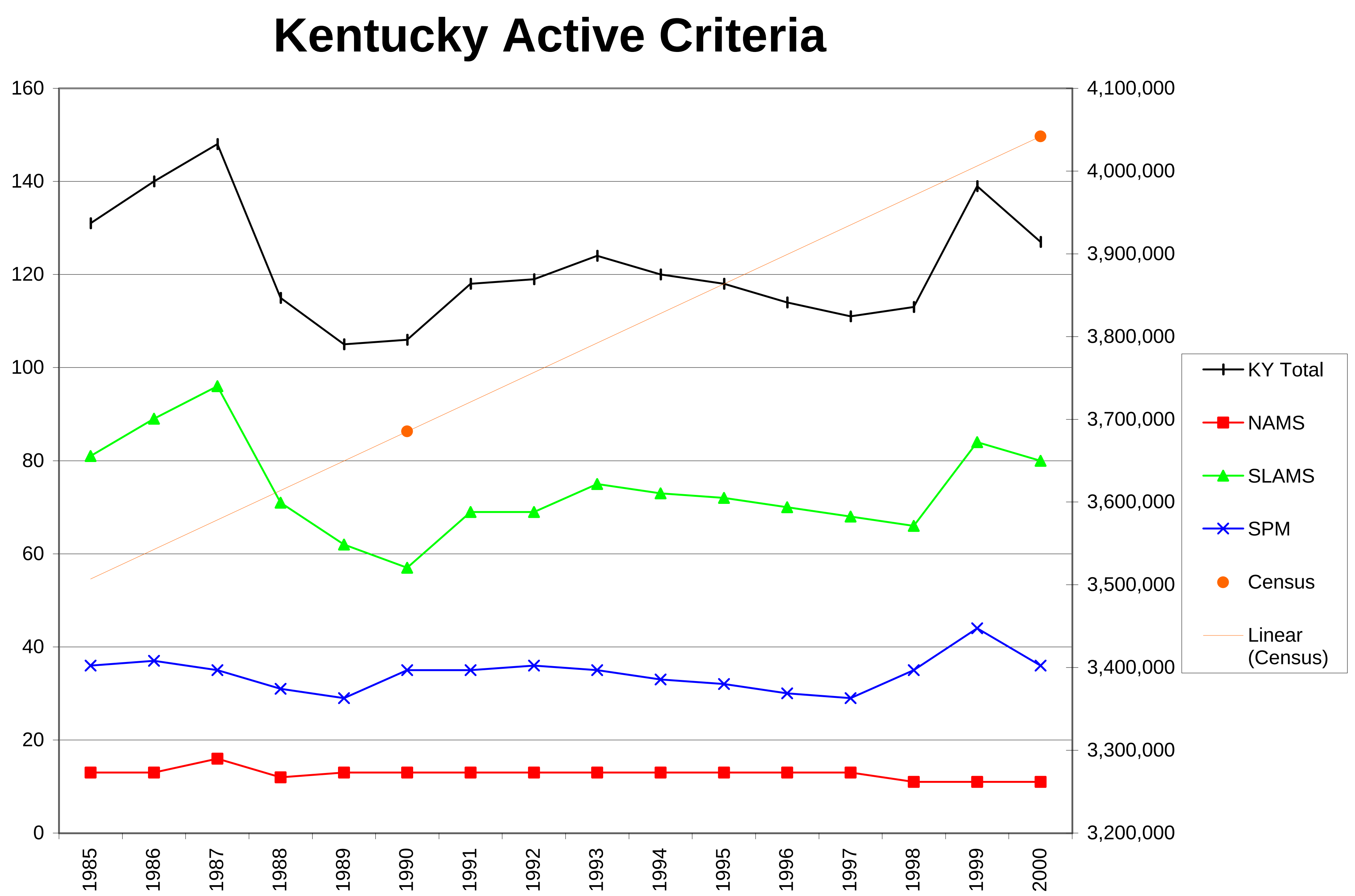
GA ActiveTSP



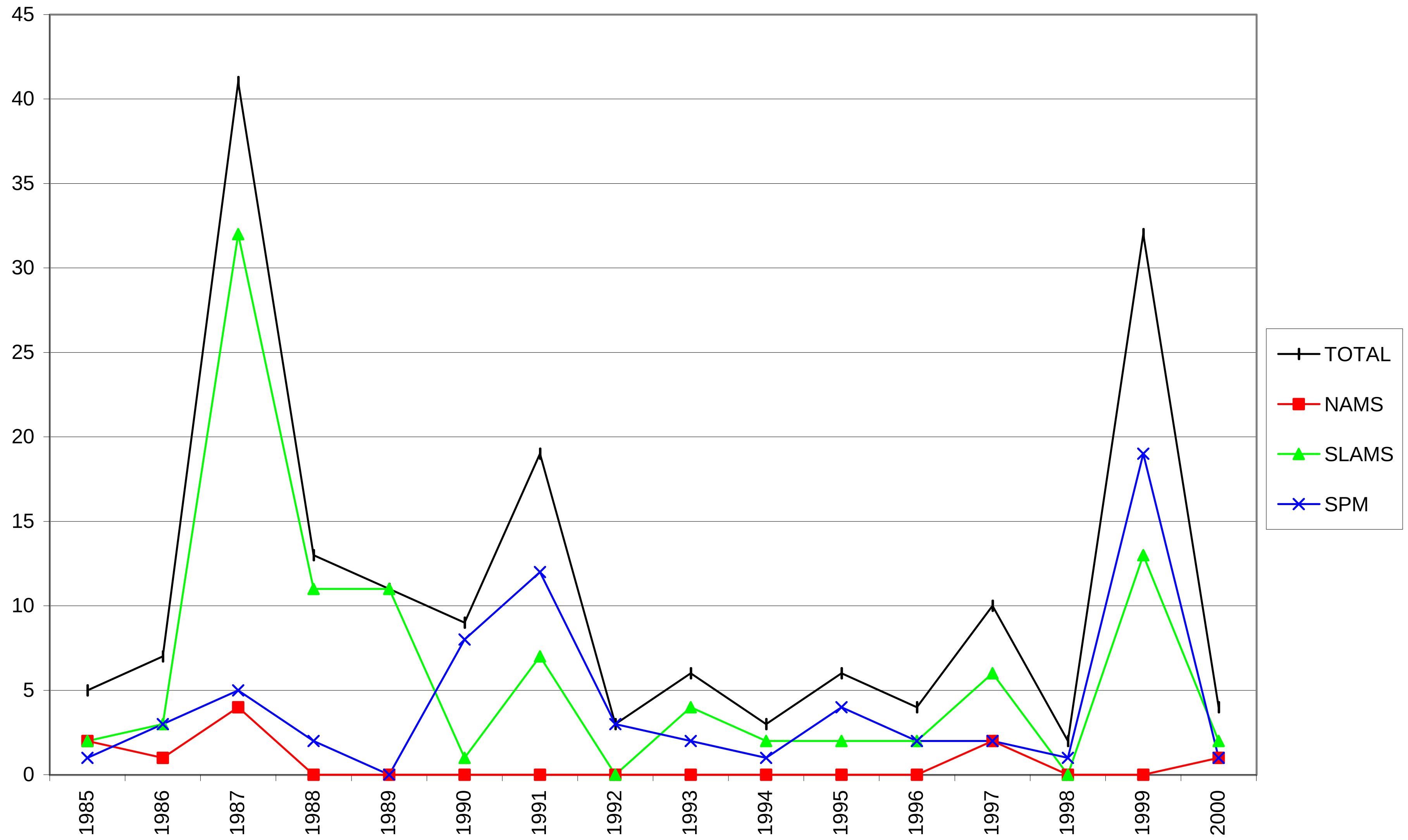
GA Terminated TSP

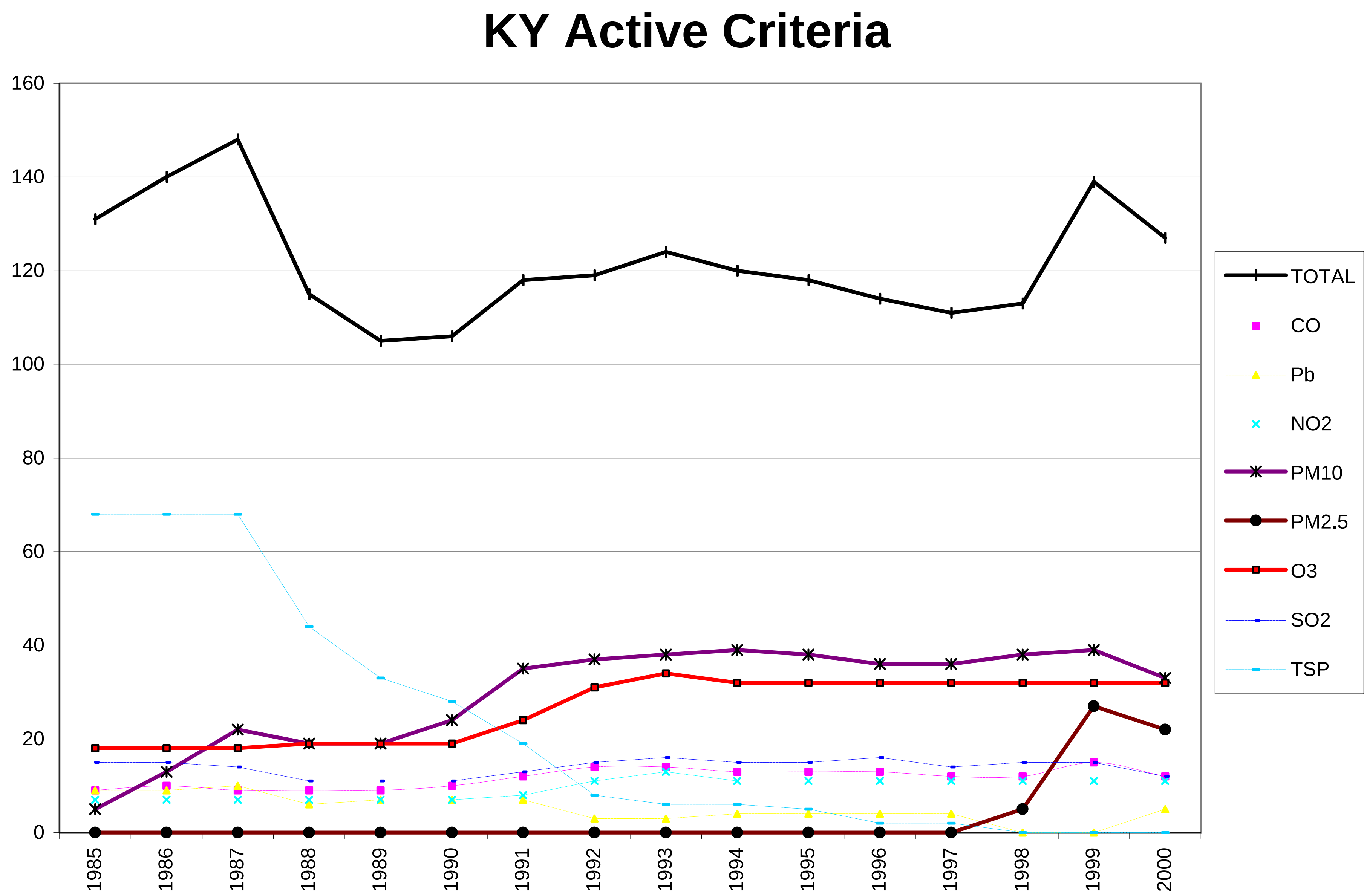



Georgia Population Growth
9,500,000
8,500,000
7,500,000
6,500,000
5,500,000
4,500,000
3,500,000
2,500,000
1,500,000
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
y = 1E-71x^23.569
R^2 = 0.9531
Census
Power Fit

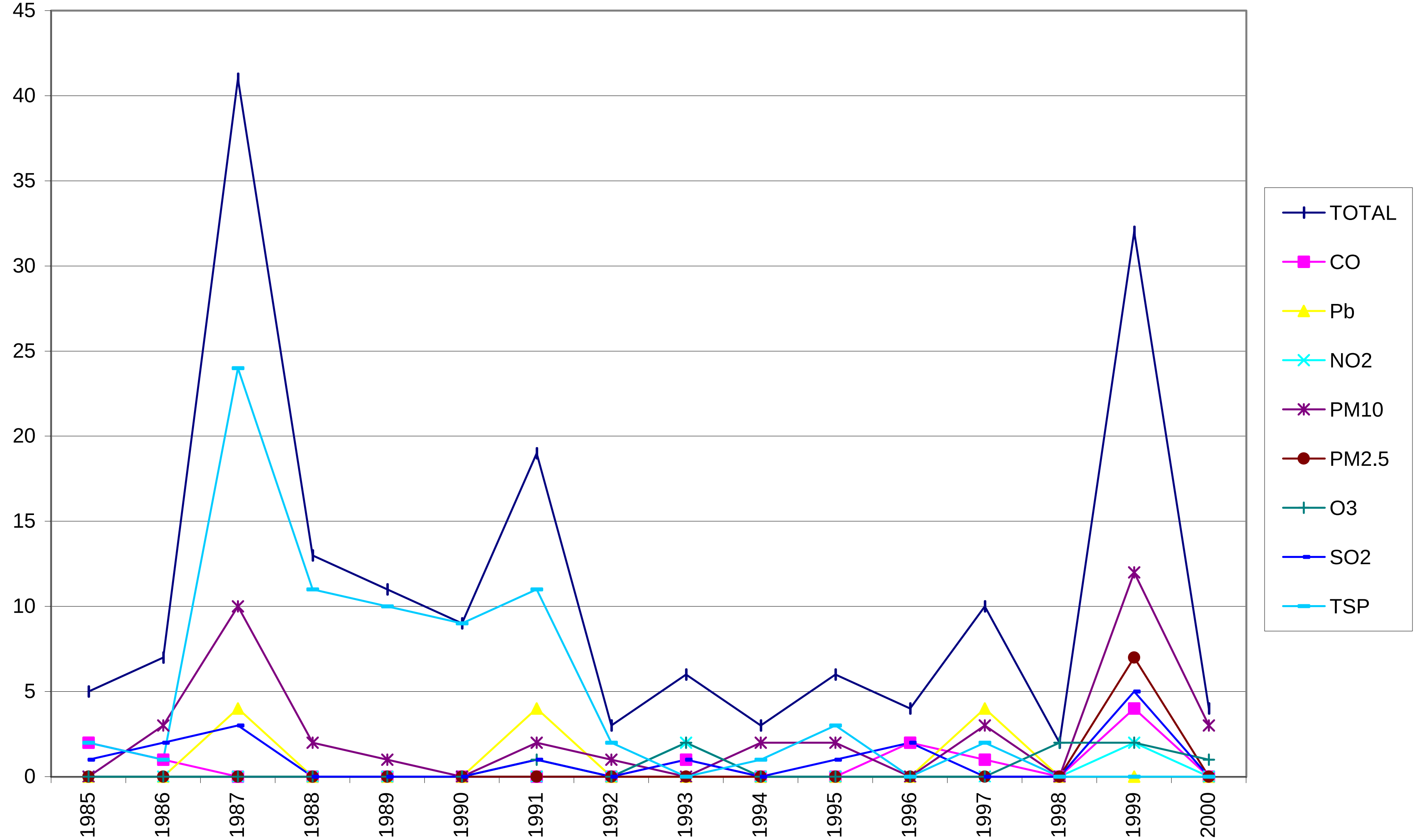

Kentucky Active Criteria
160
140
120
100
80
60
40
20
0
4,100,000
4,000,000
3,900,000
3,800,000
3,700,000
3,600,000
3,500,000
3,400,000
3,300,000
3,200,000
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
KY Total
NAMS
SLAMS
SPM
Census
Linear (Census)

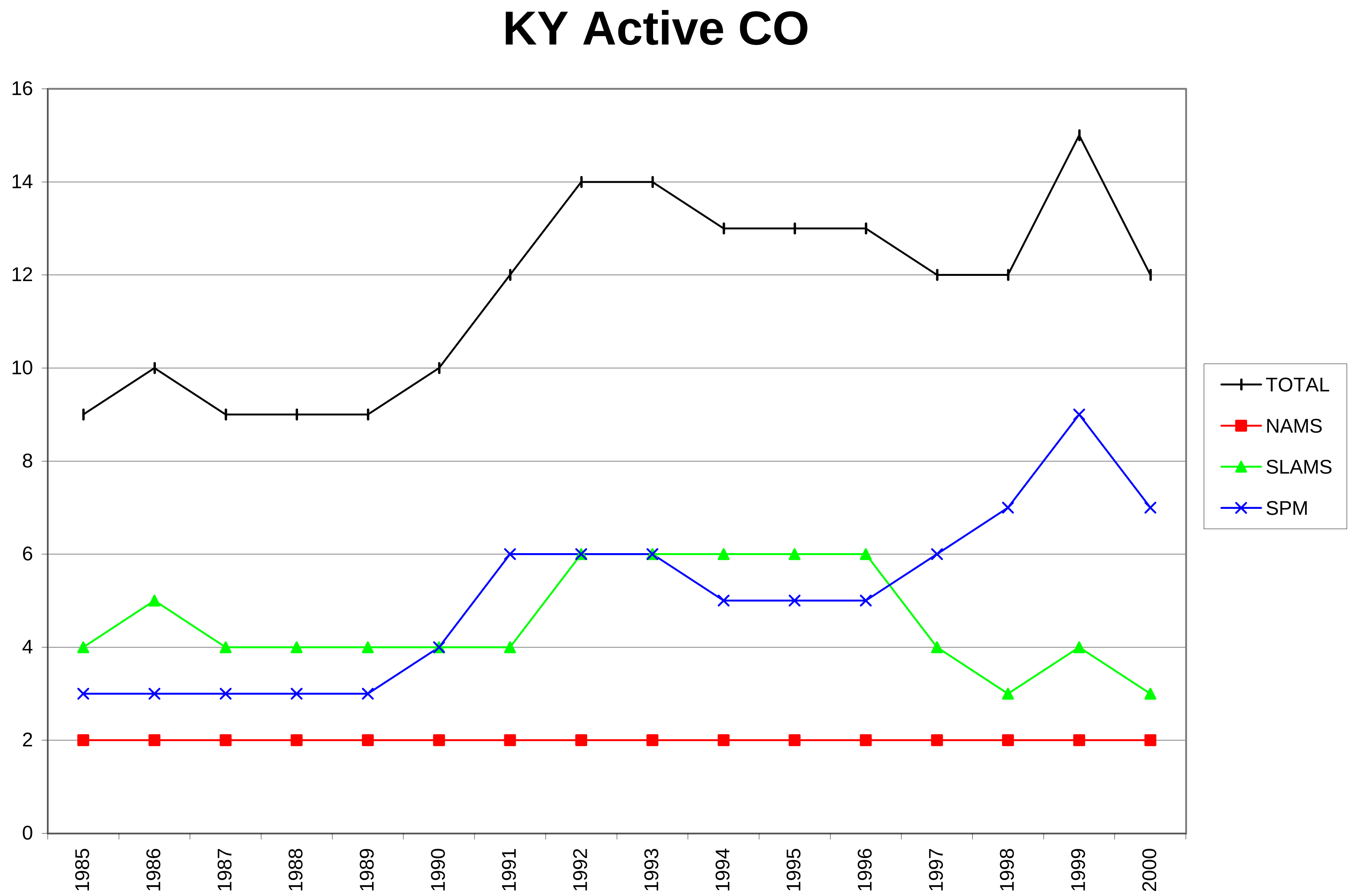
KY Terminated Parameters



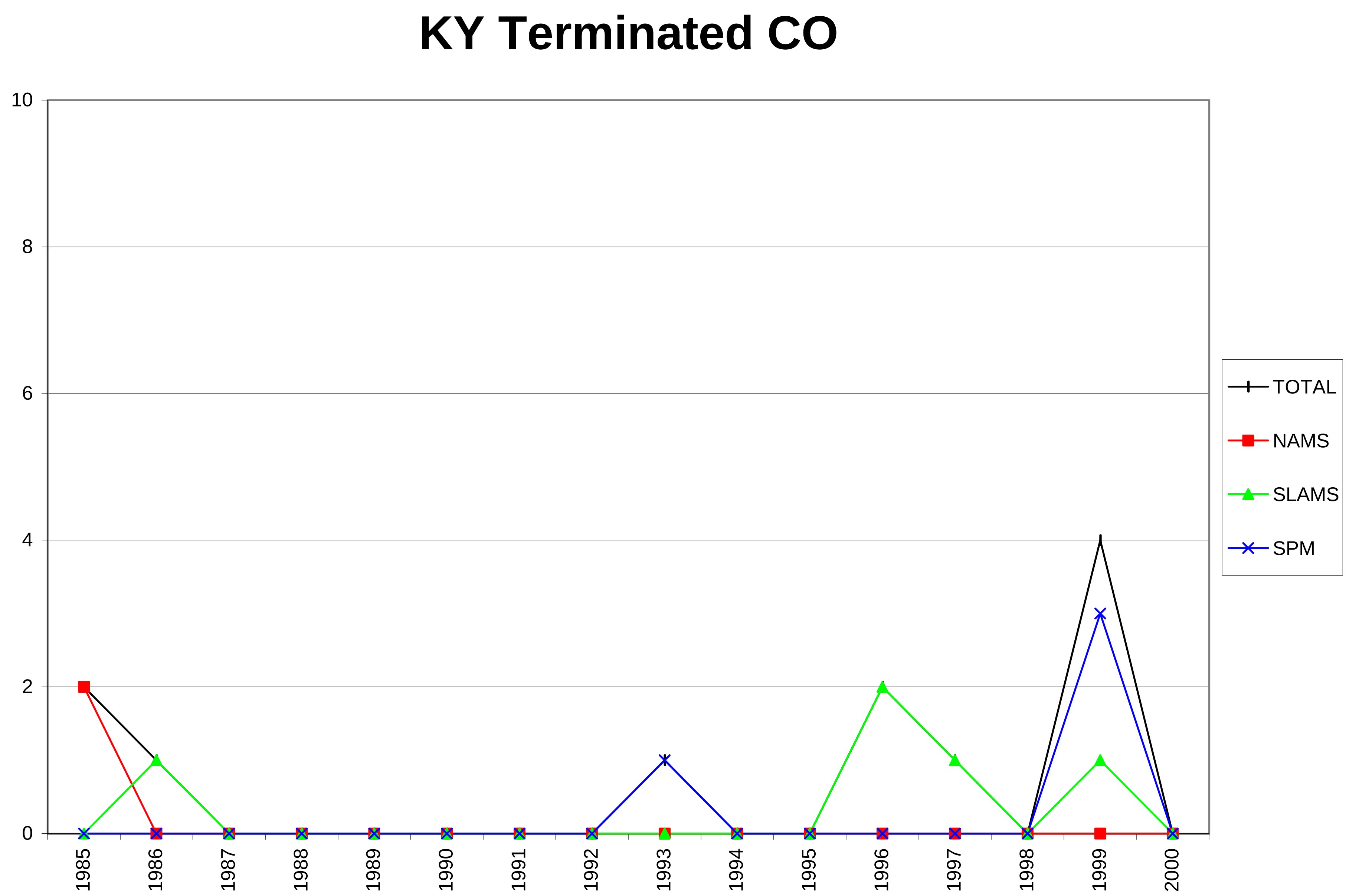

KY Active Criteria
160
140
120
100
80
60
40
20
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
CO
Pb
NO2
PM10
PM2.5
O3
SO2
TSP

KY Terminated Parameters

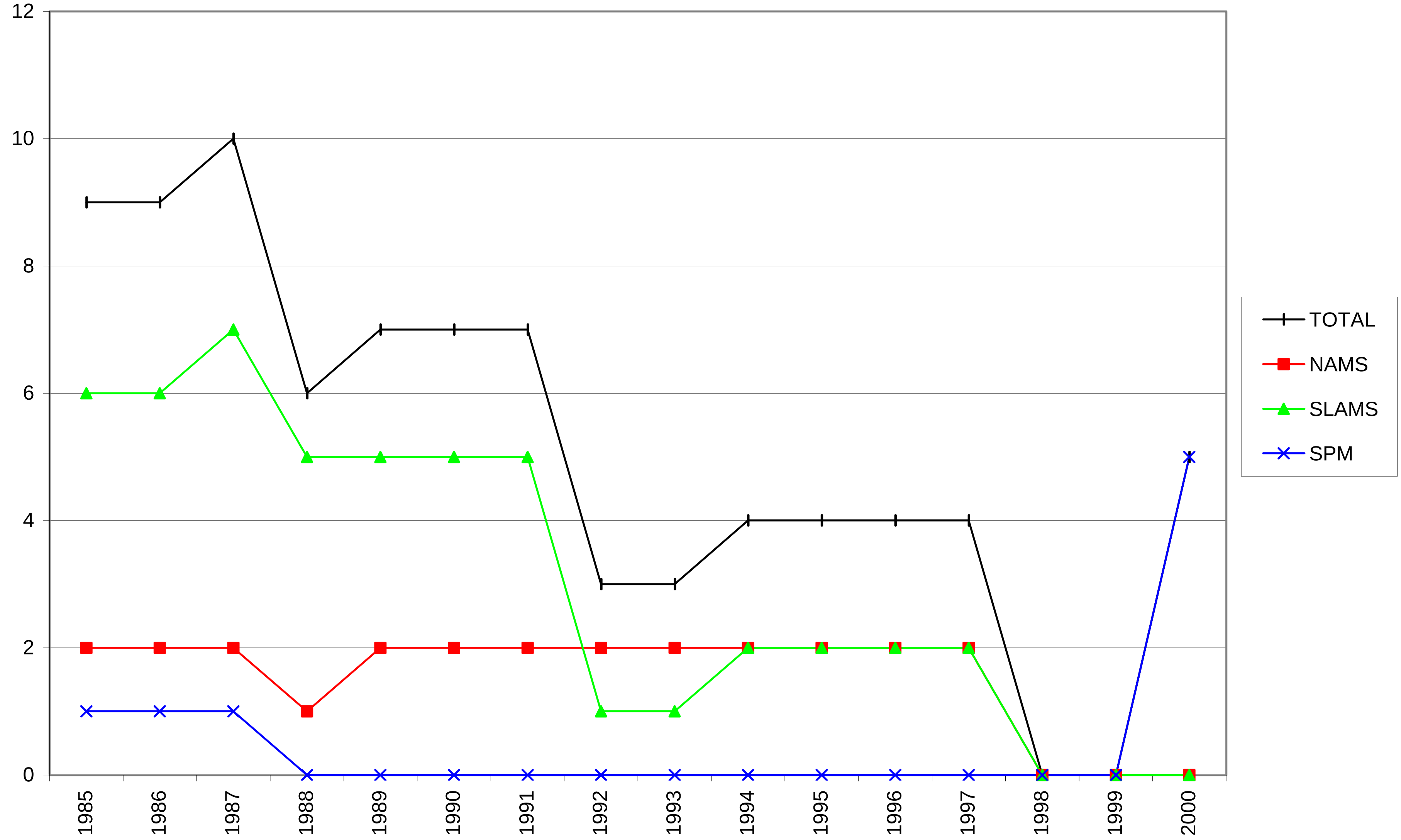




KY Active CO
16
14
12
10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

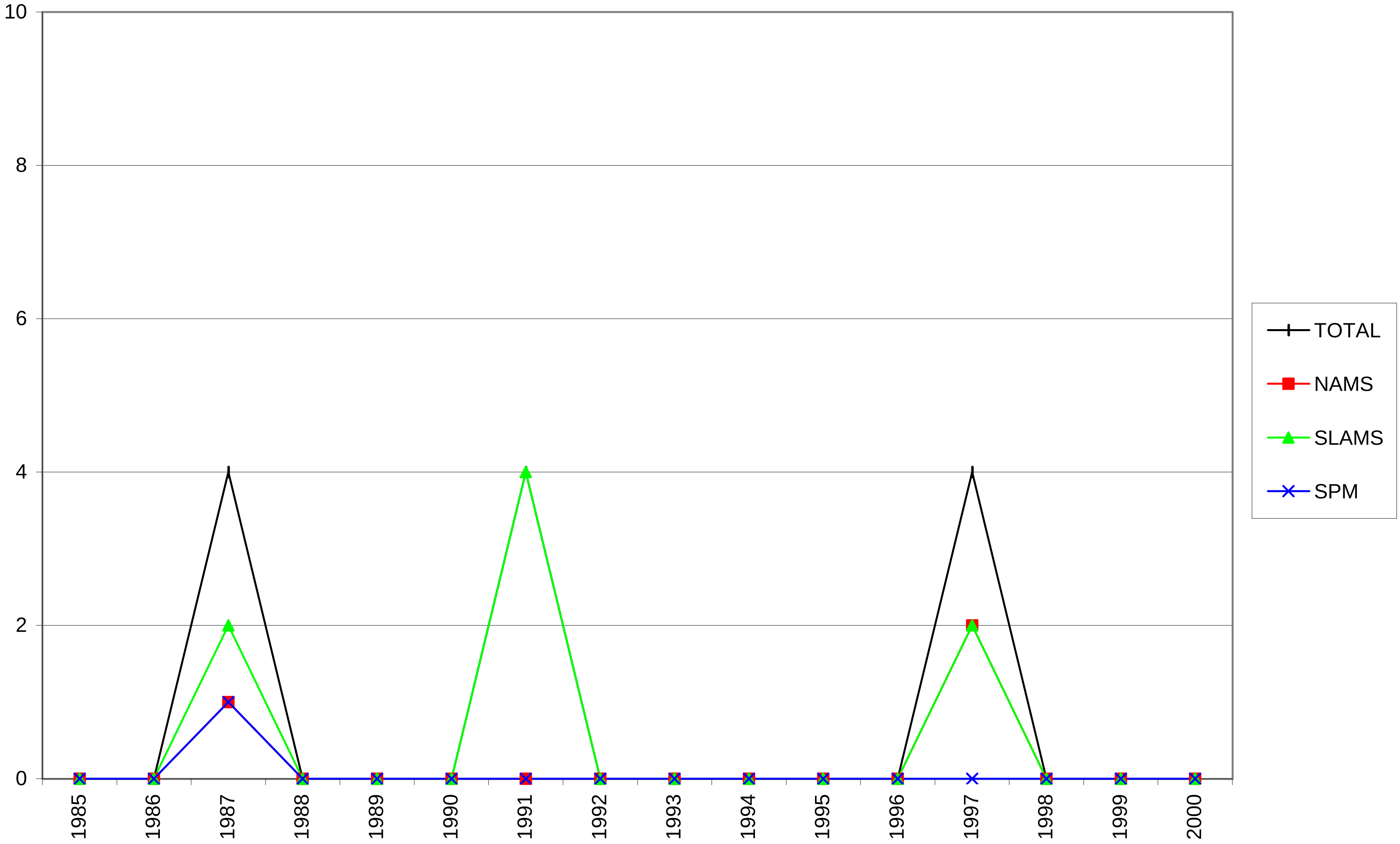

KY Terminated CO
10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

KY Active Pb

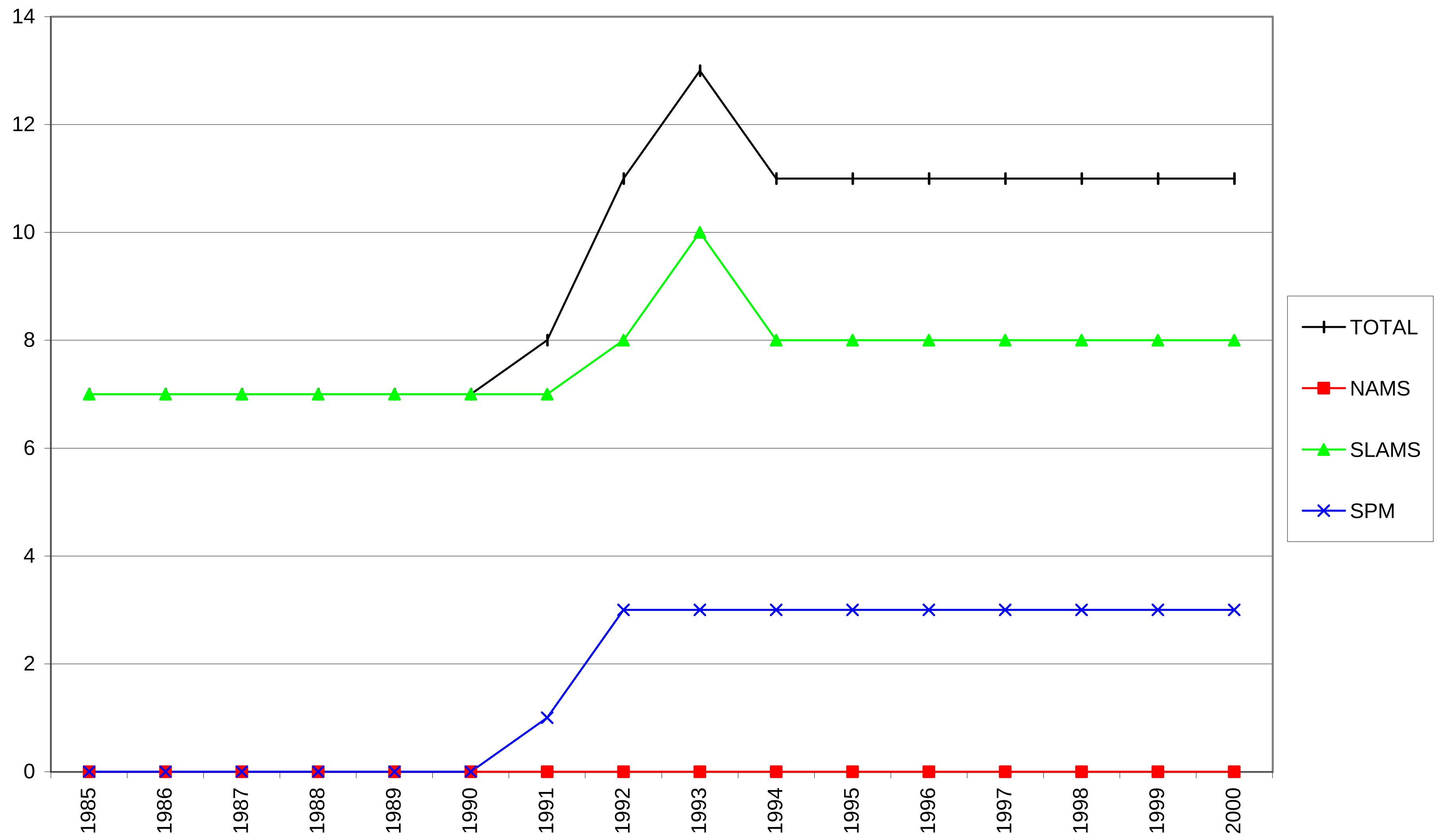


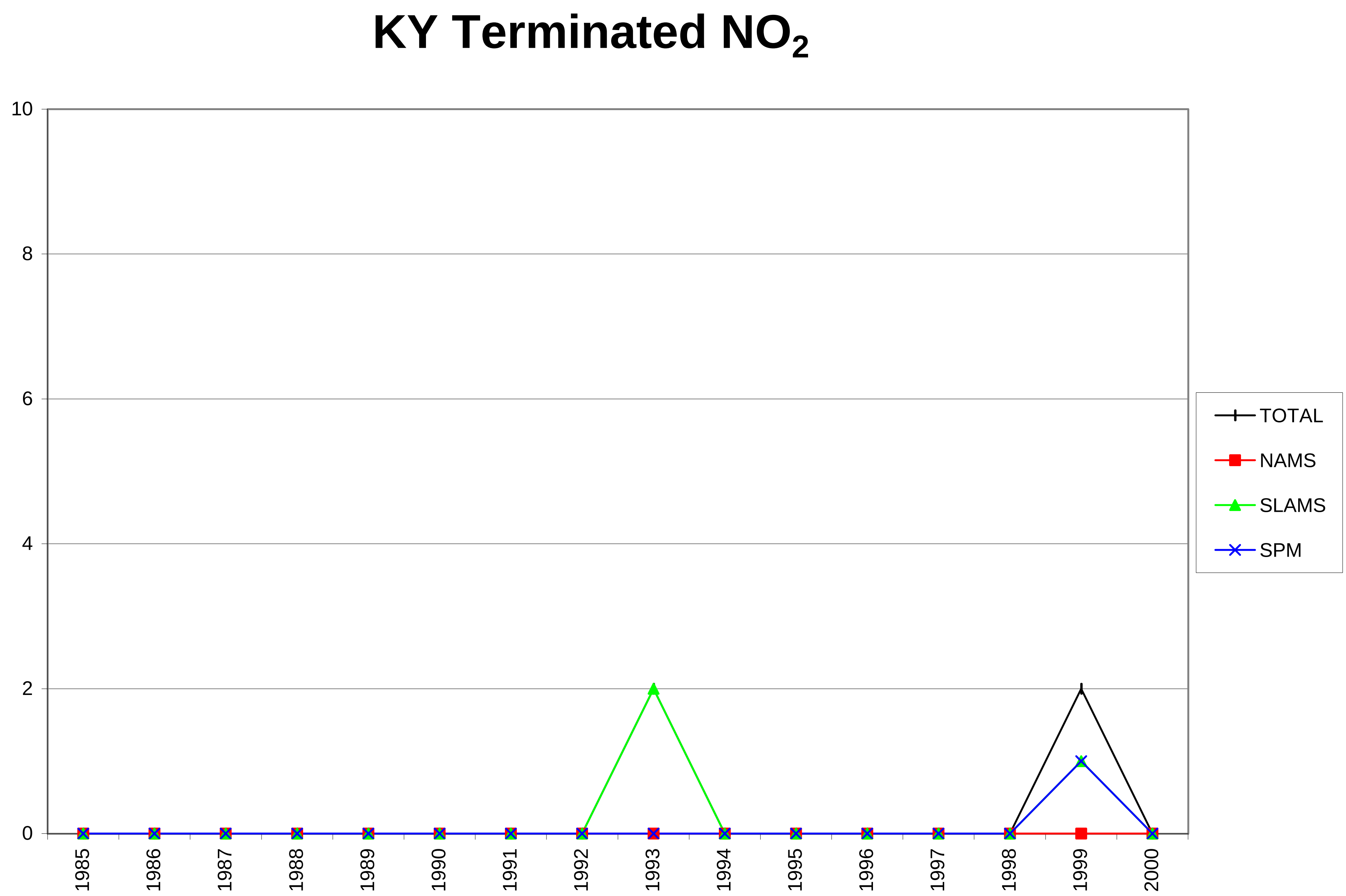
12
10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

KY Terminated Pb

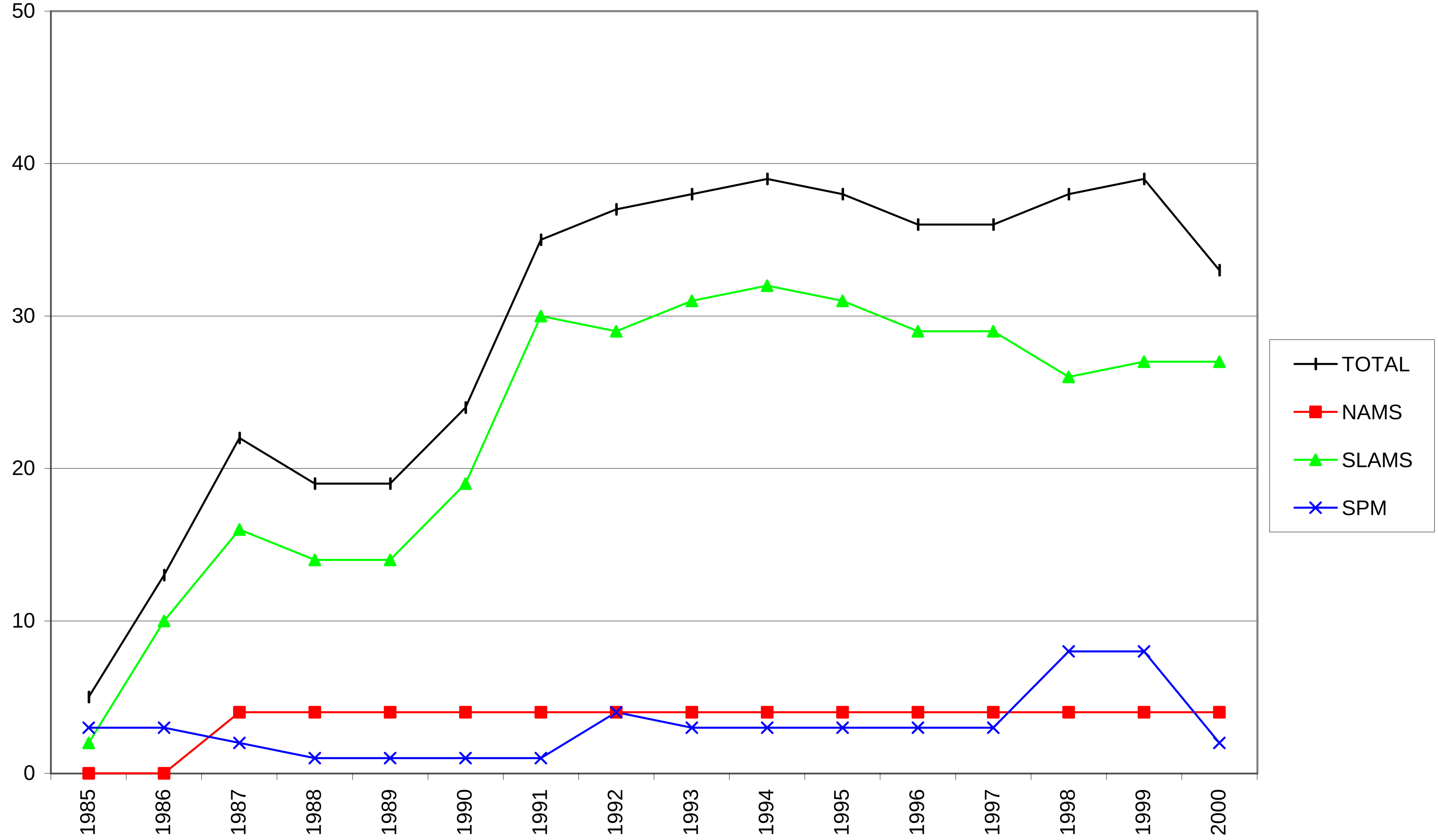


KY Active NO_2

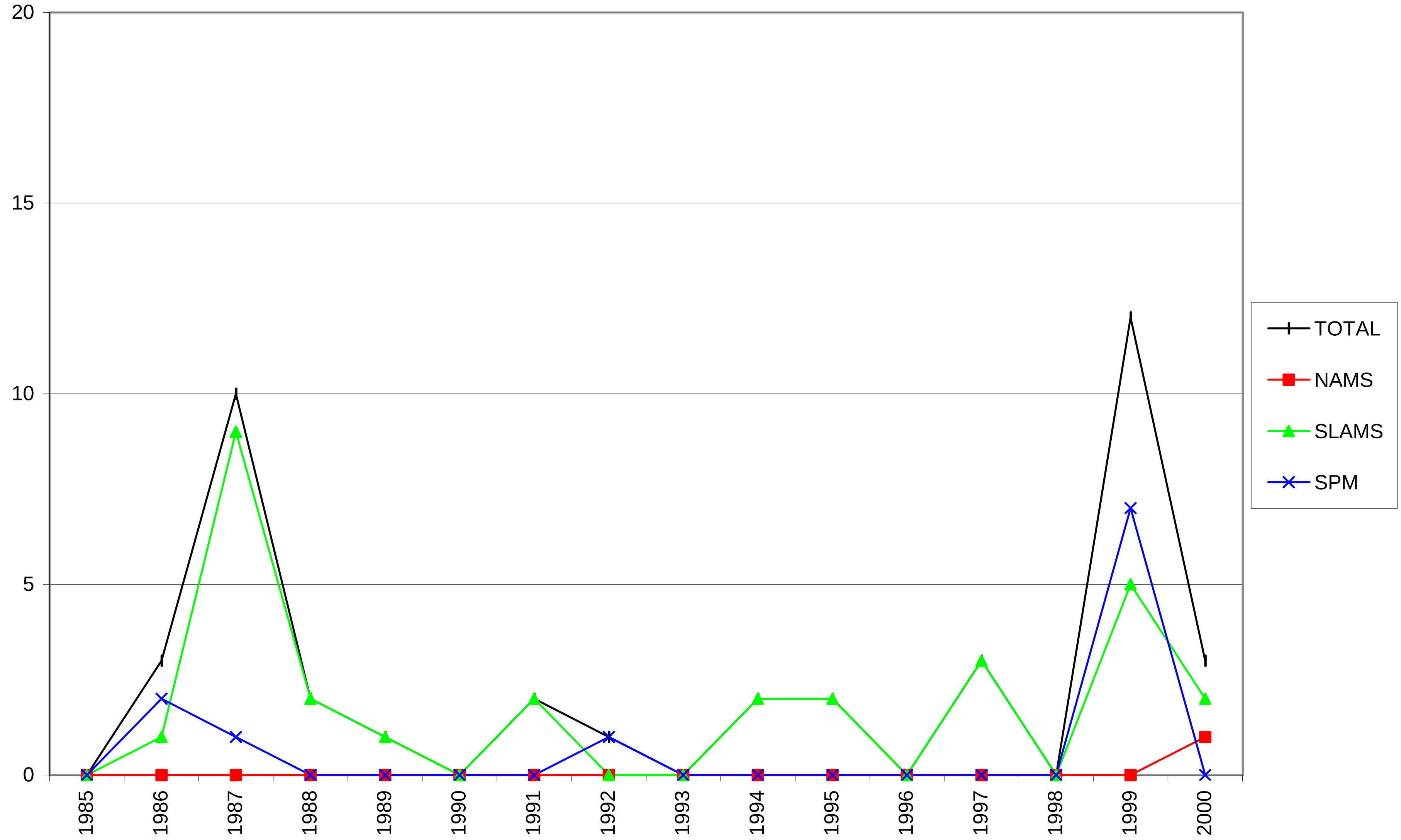



KY Terminated NO_2
10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

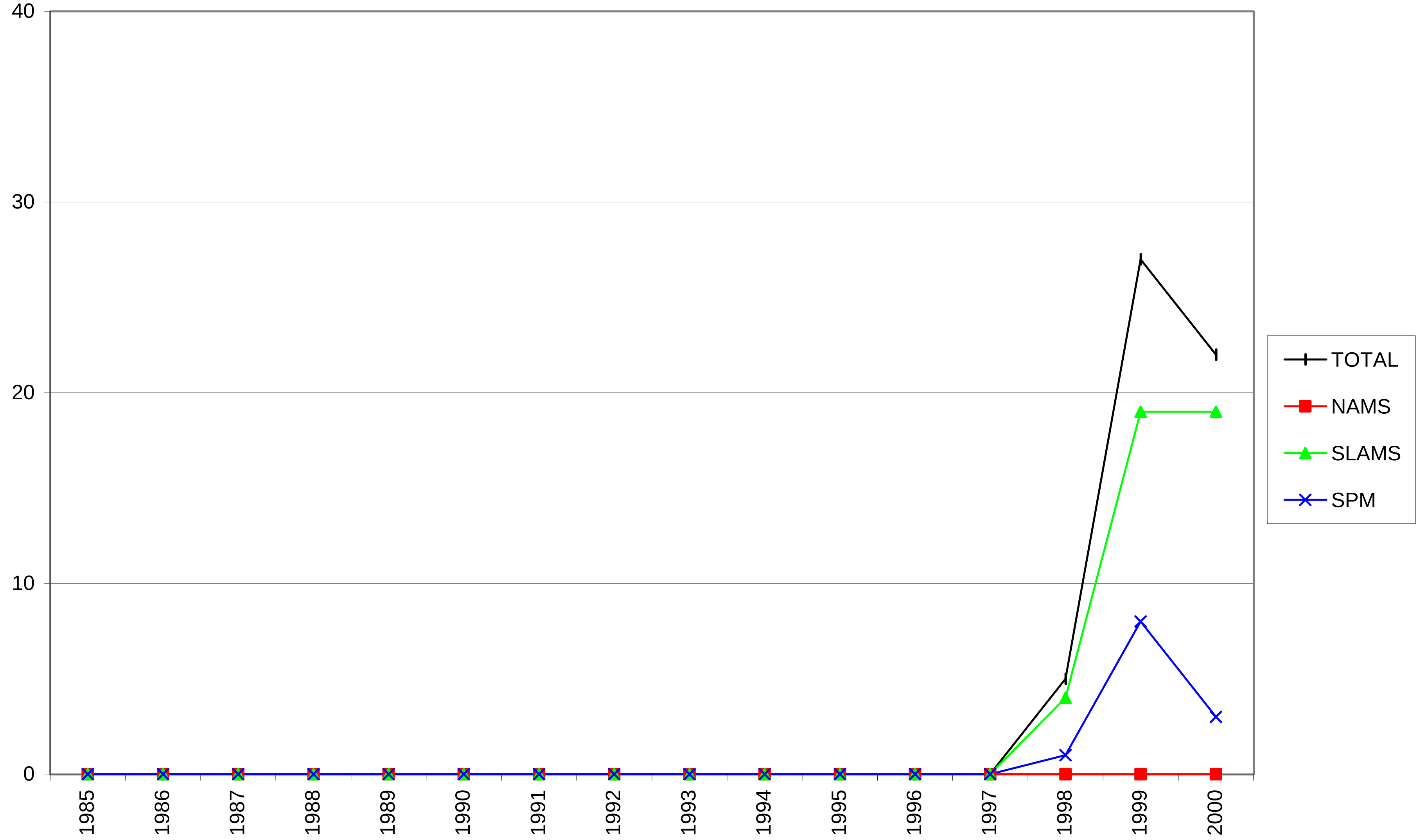
KY Active PM_{10}

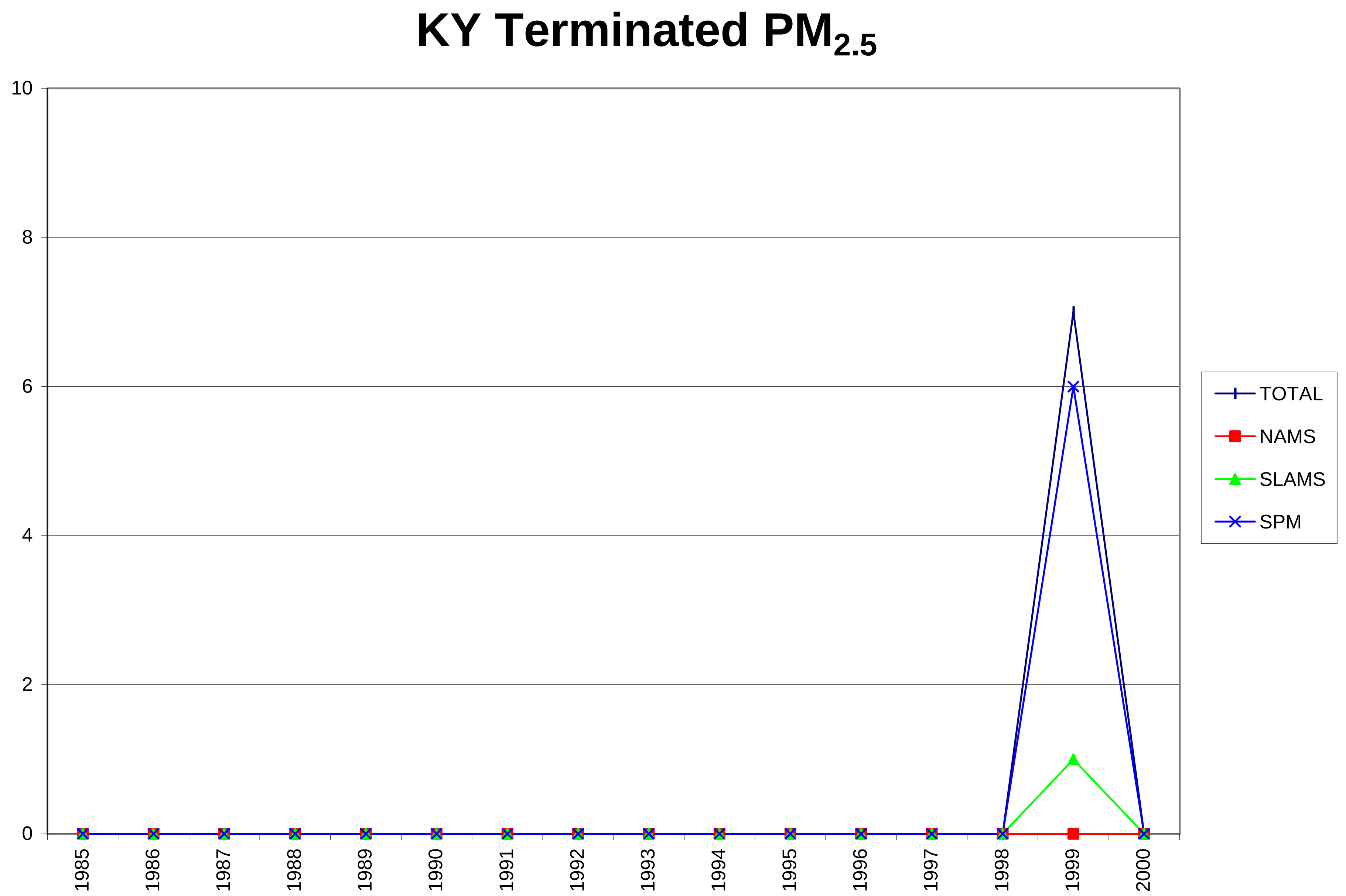


KY Terminated PM_{10}

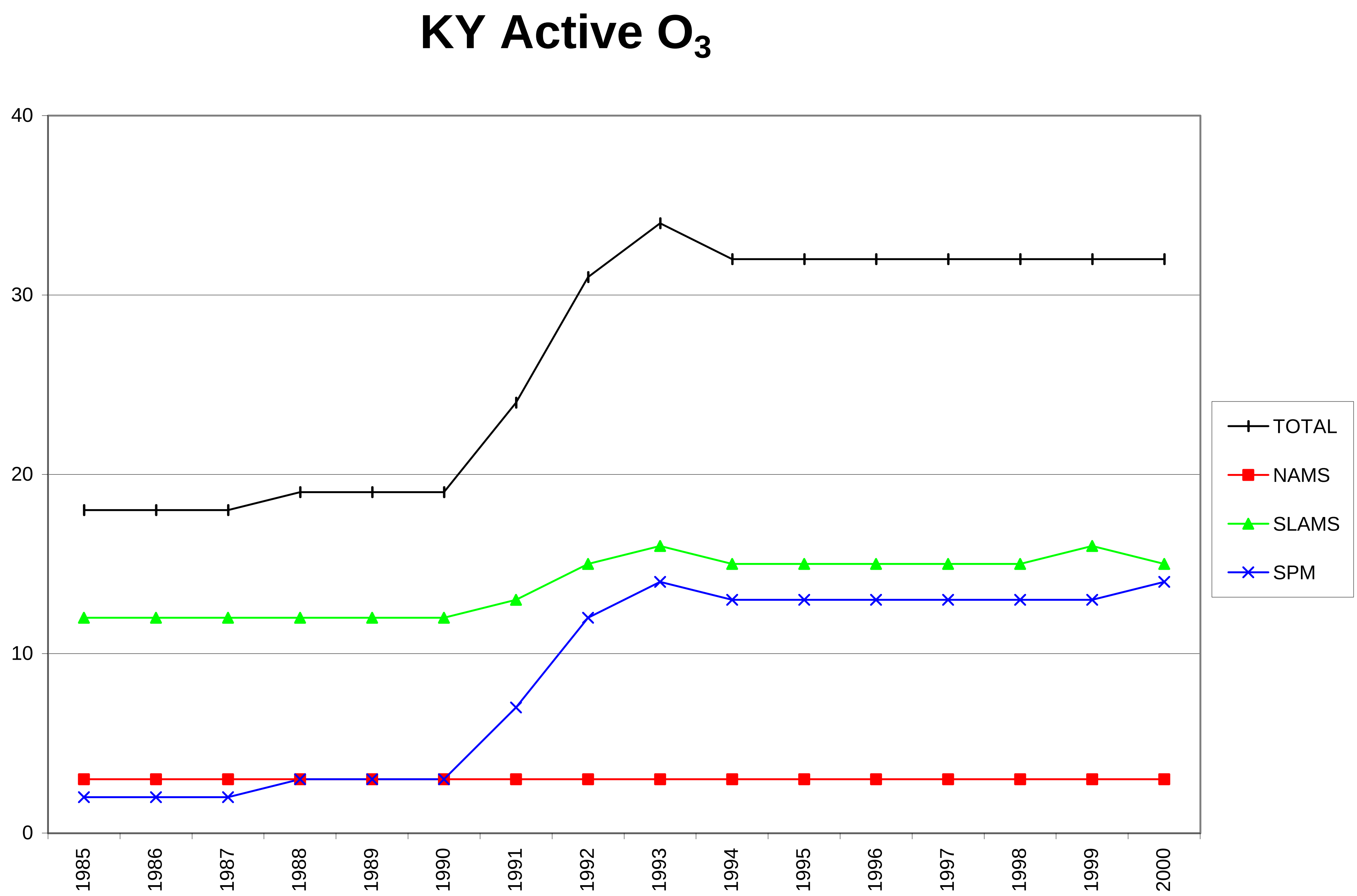


KY Active $PM_{2.5}$



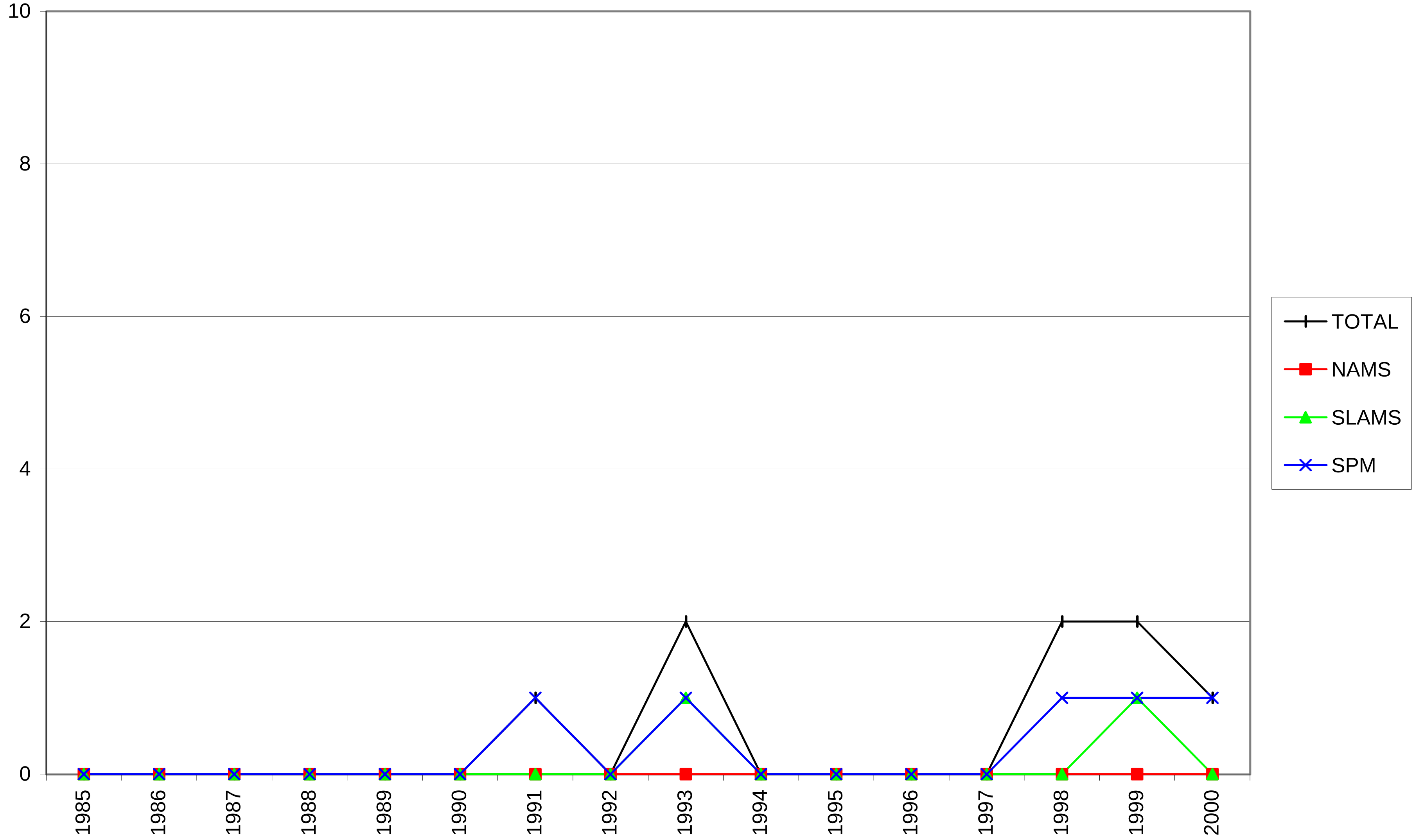


KY Terminated PM2.5
10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

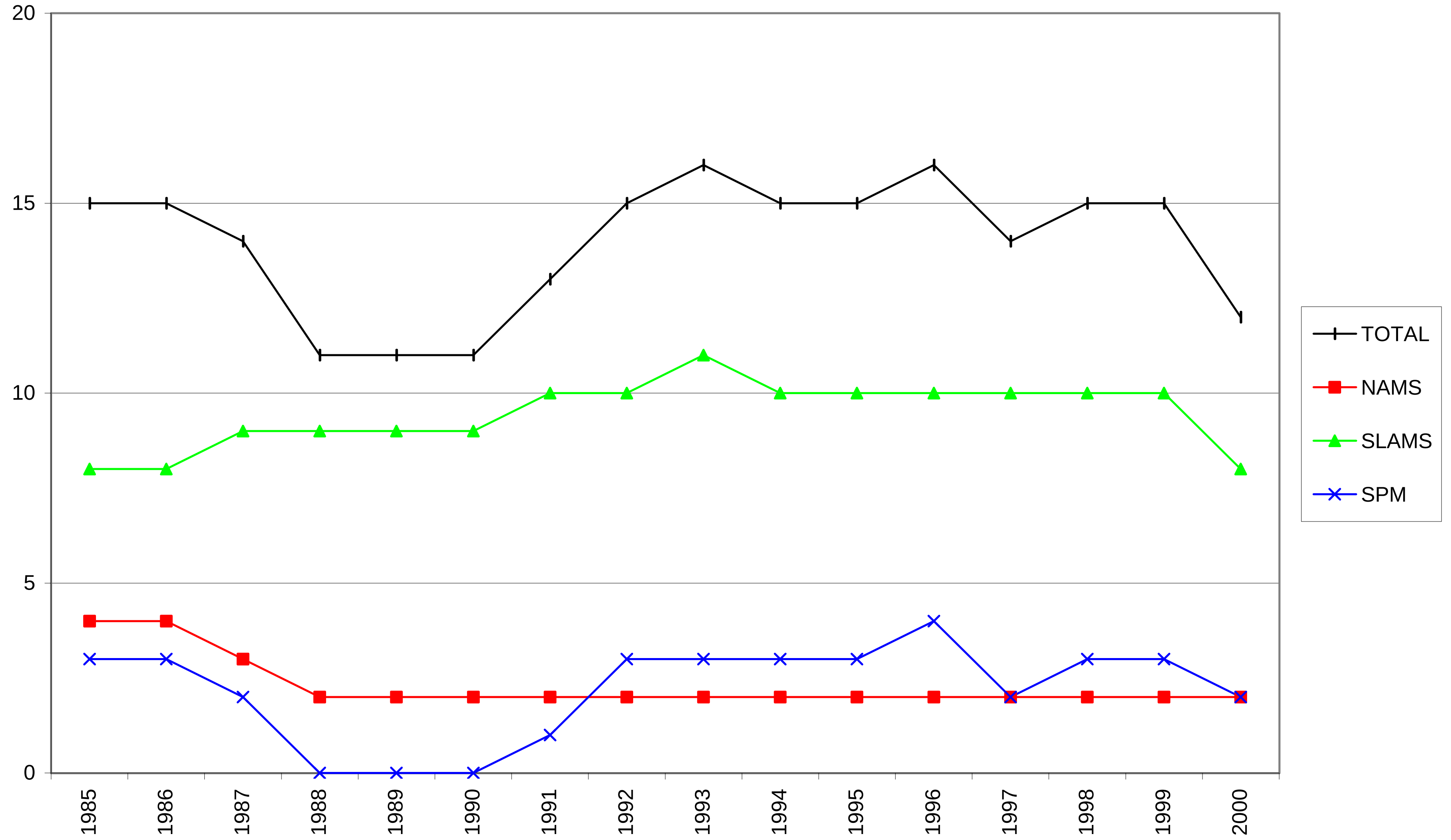


KY Active O_3
40
30
20
10
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

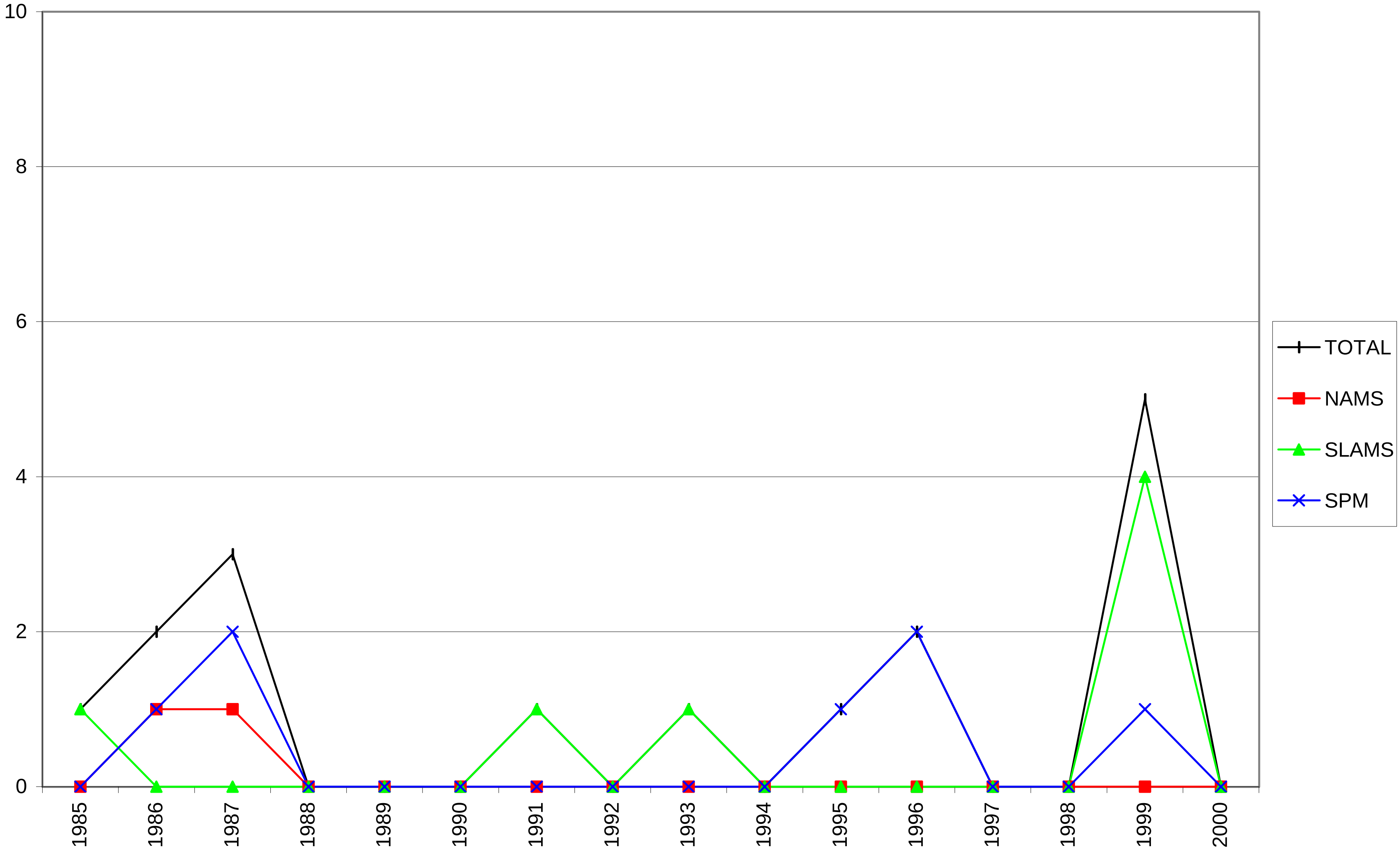
KY Terminated O_3

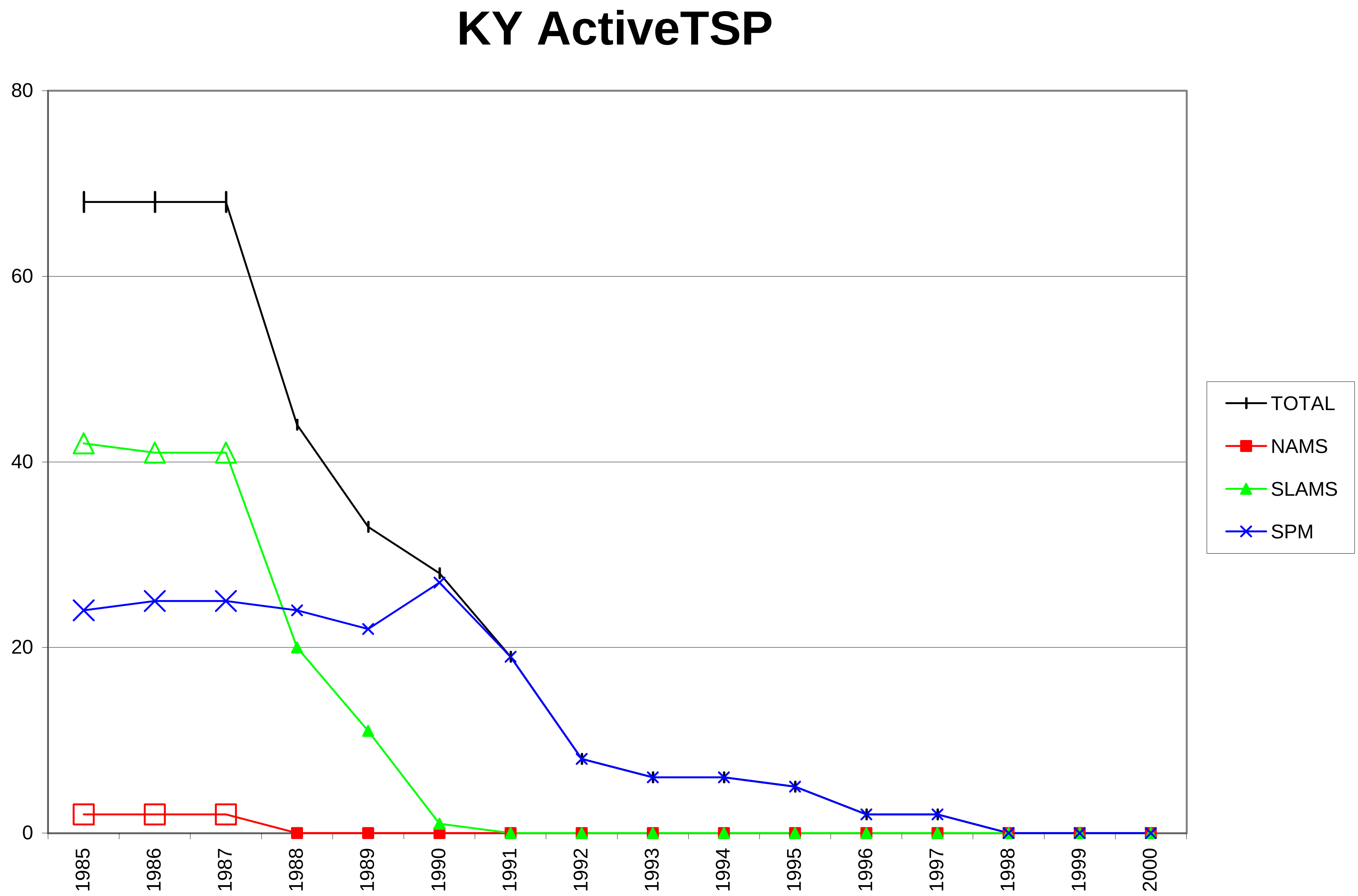


KY Active SO_2



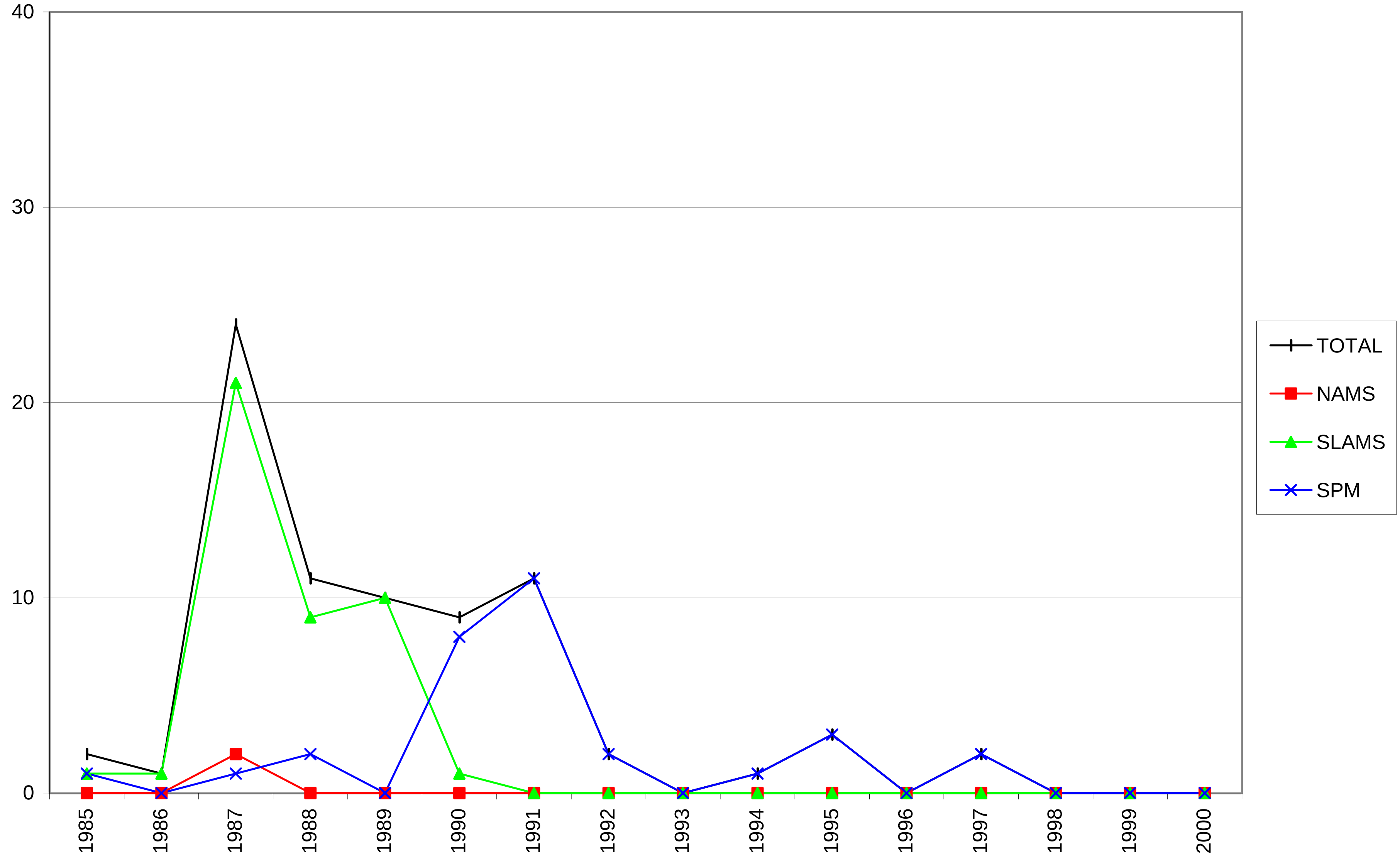
KY Terminated SO_2

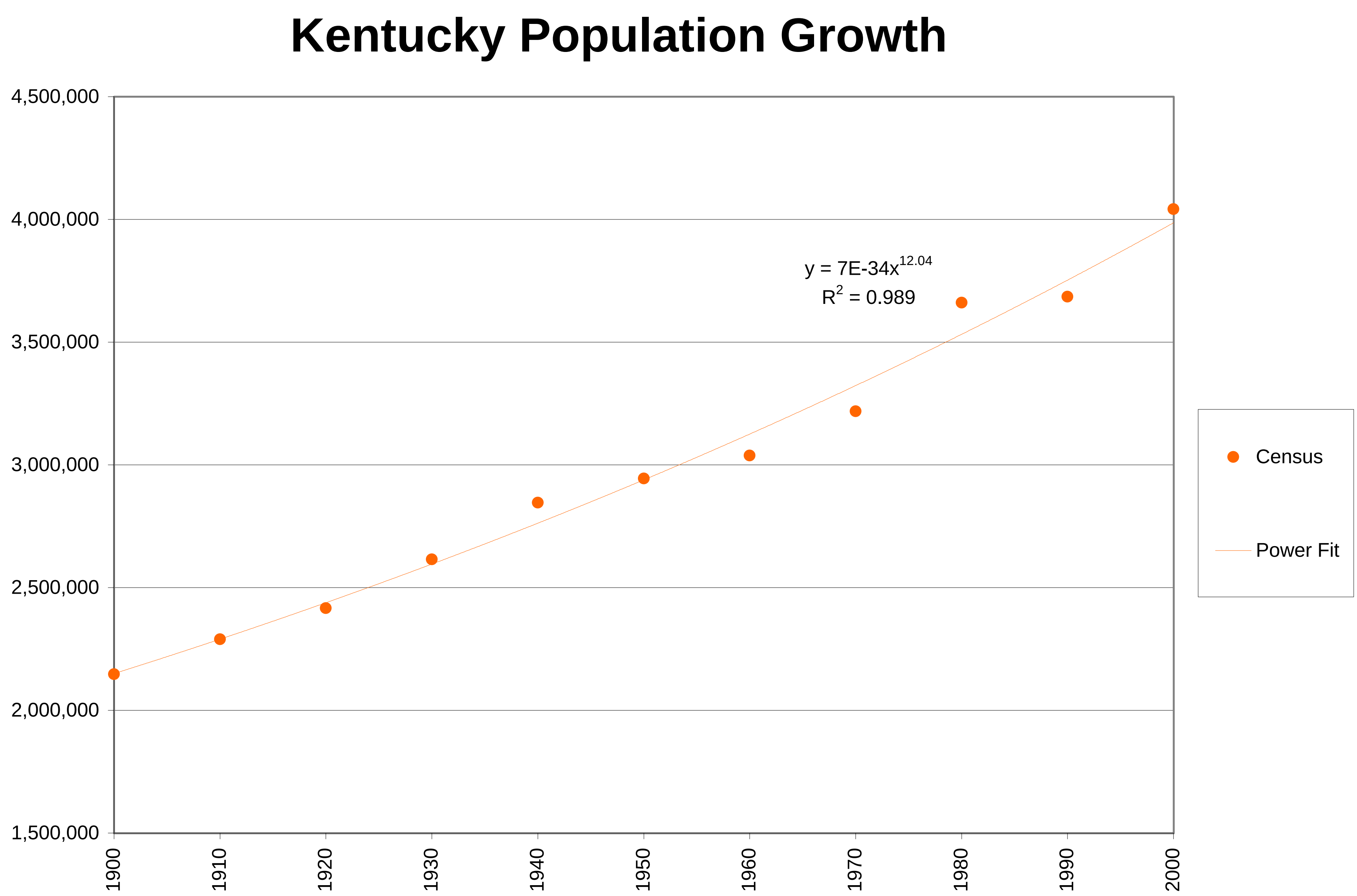


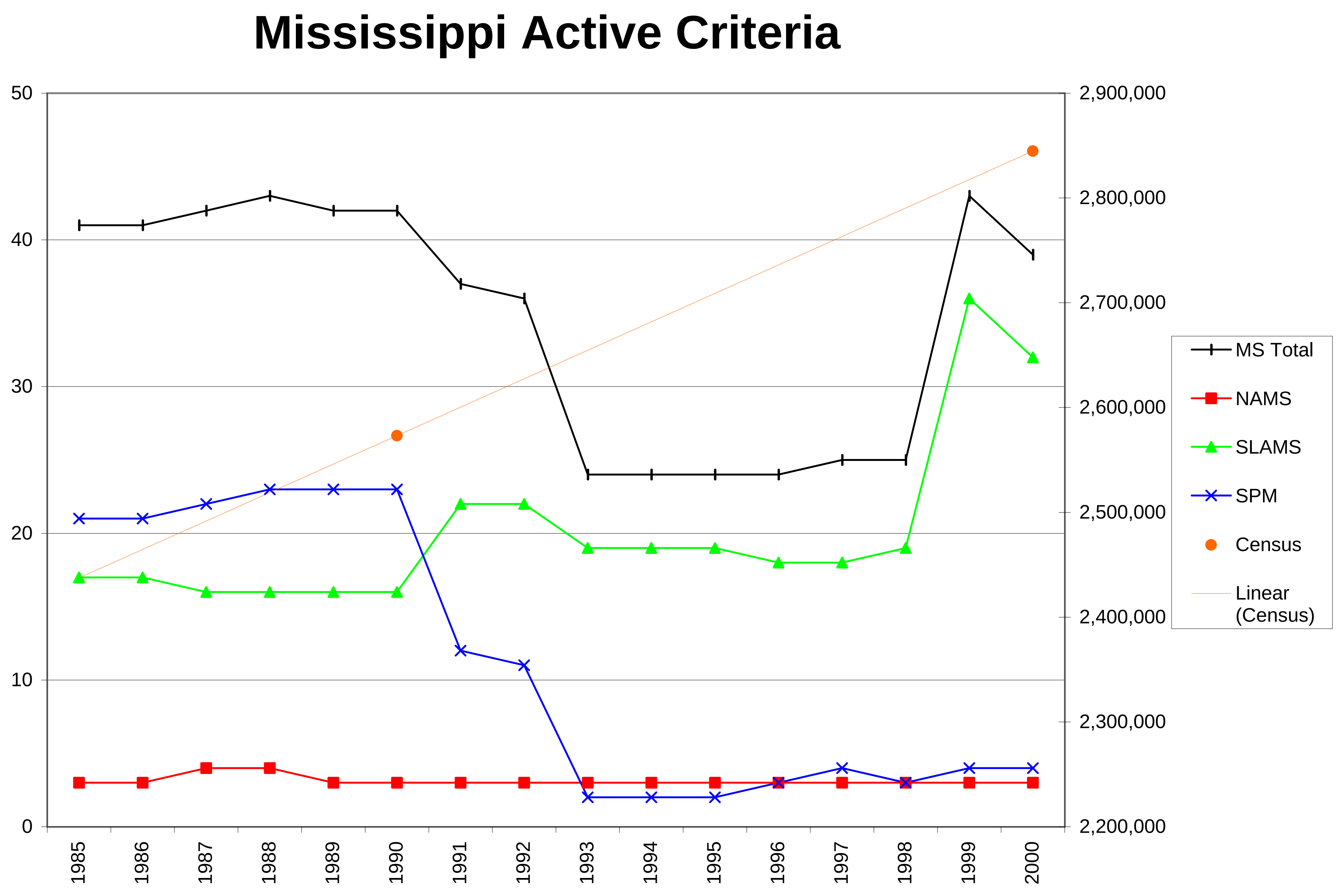


KY ActiveTSP
80
60
40
20
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

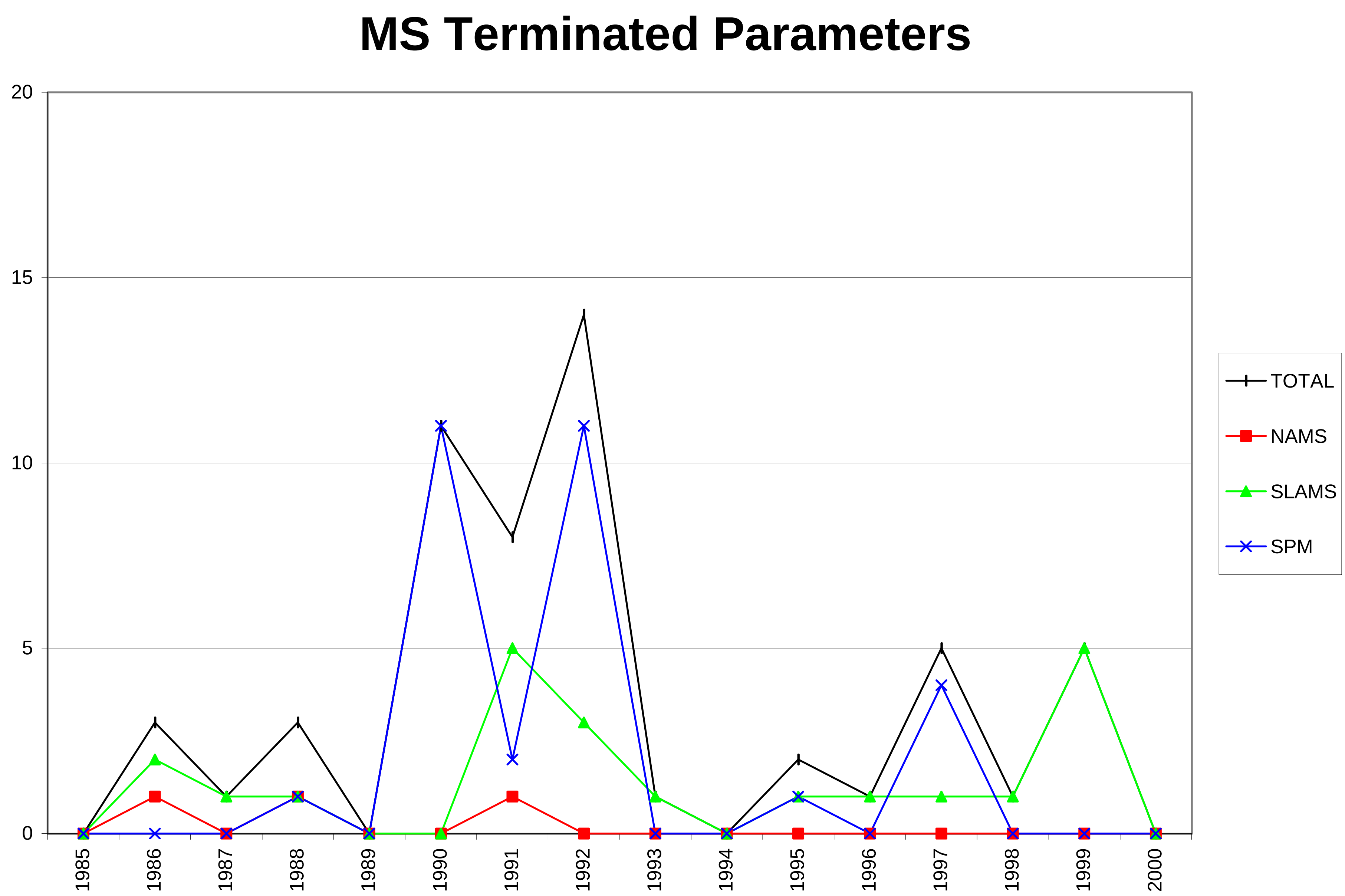
KY Terminated TSP



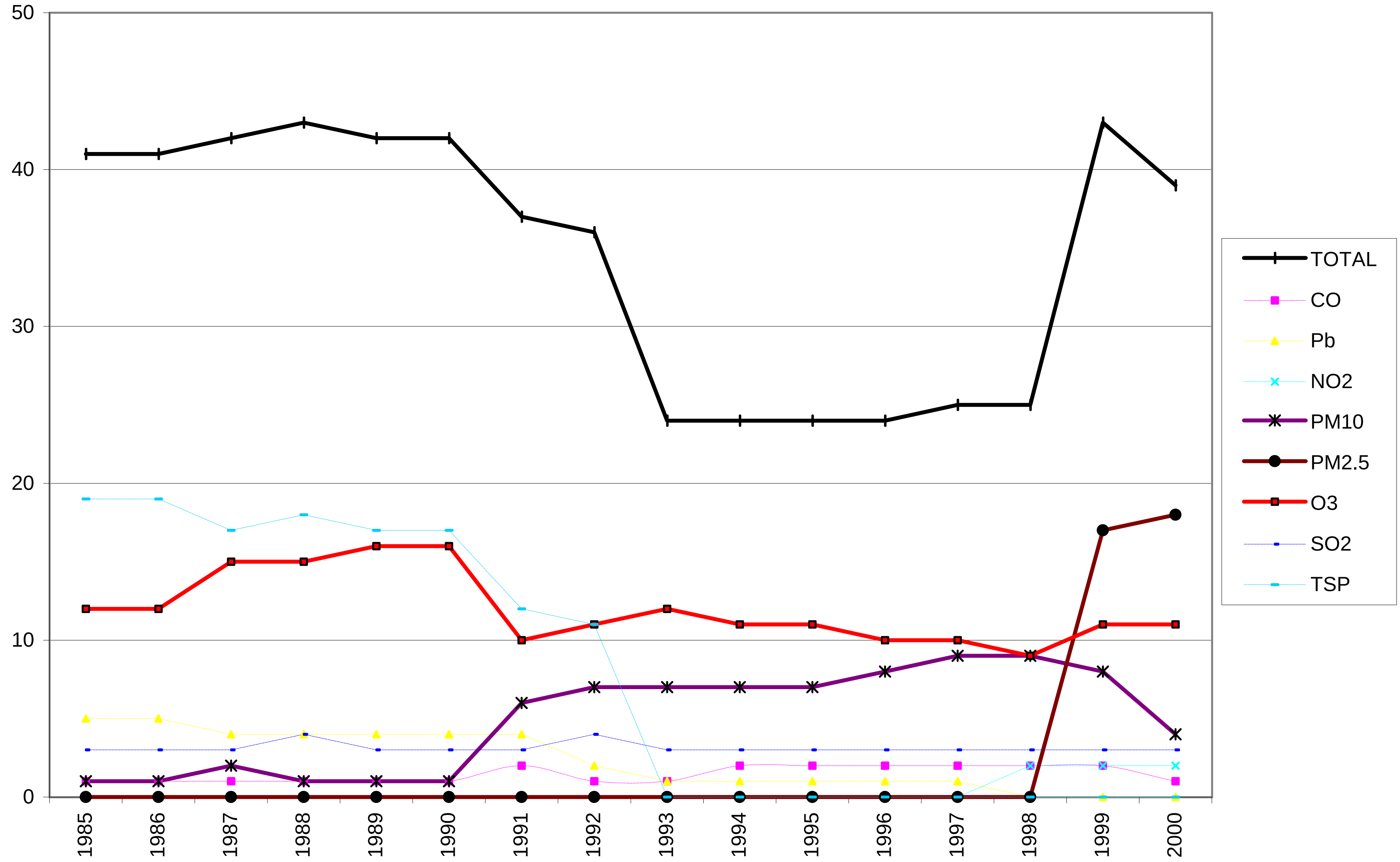

Kentucky Population Growth
4,500,000
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
y = 7E-34x^12.04
R^2 = 0.989
Census
Power Fit



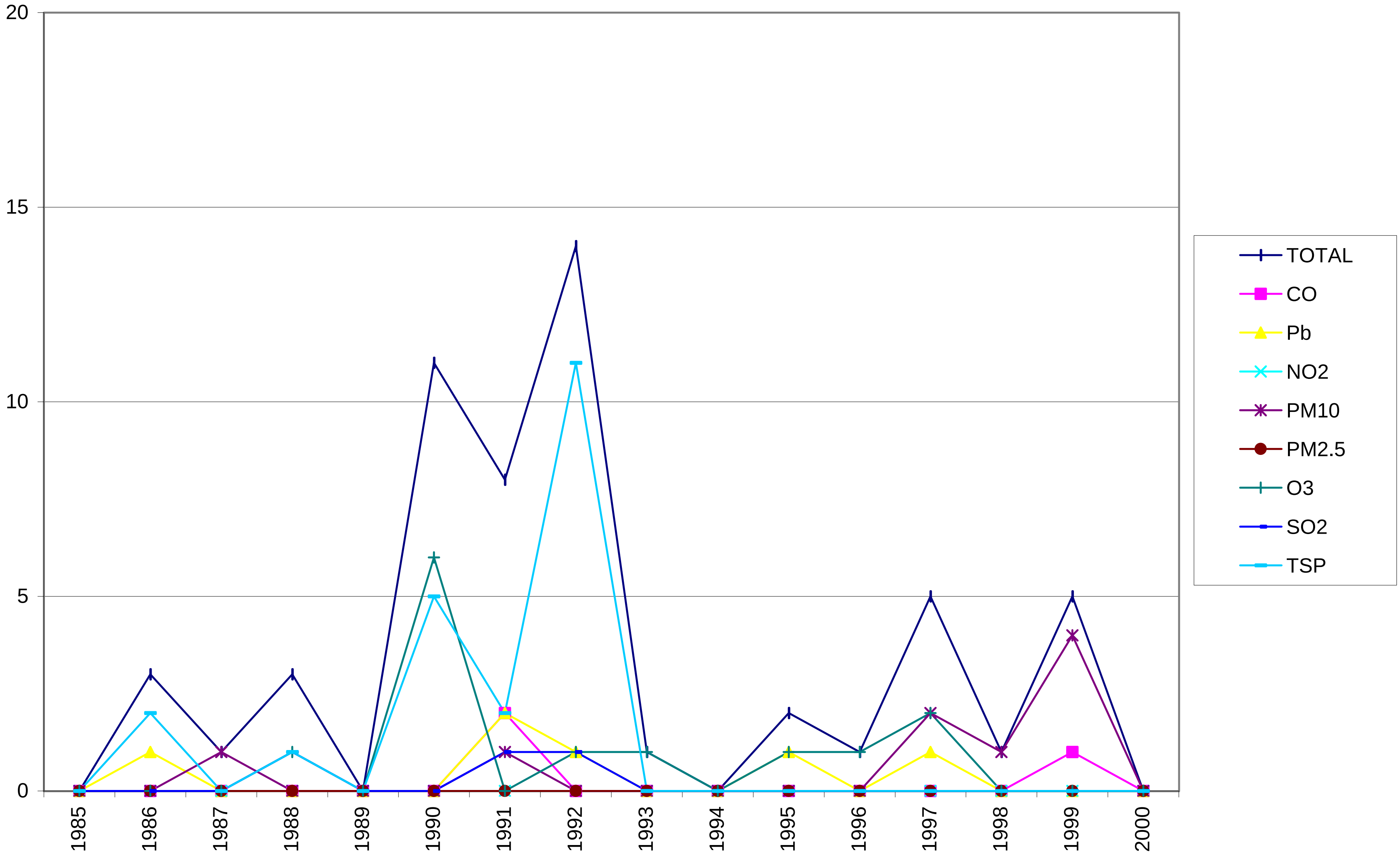
Mississippi Active Criteria
50
40
30
20
10
0
2,900,000
2,800,000
2,700,000
2,600,000
2,500,000
2,400,000
2,300,000
2,200,000
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
MS Total
NAMS
SLAMS
SPM
Census
Linear (Census)


MS Terminated Parameters
20
15
10
5
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

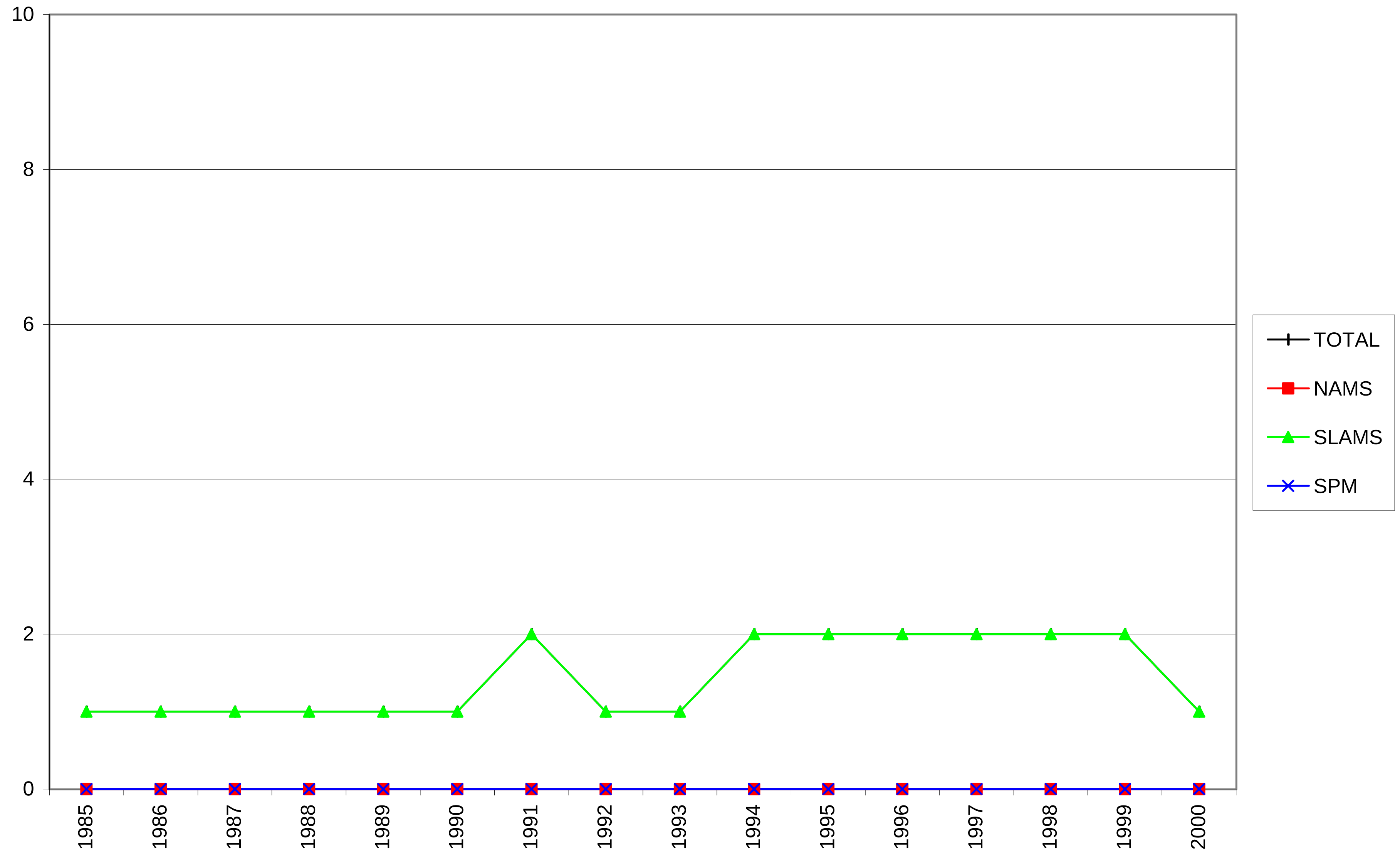
MS Active Criteria



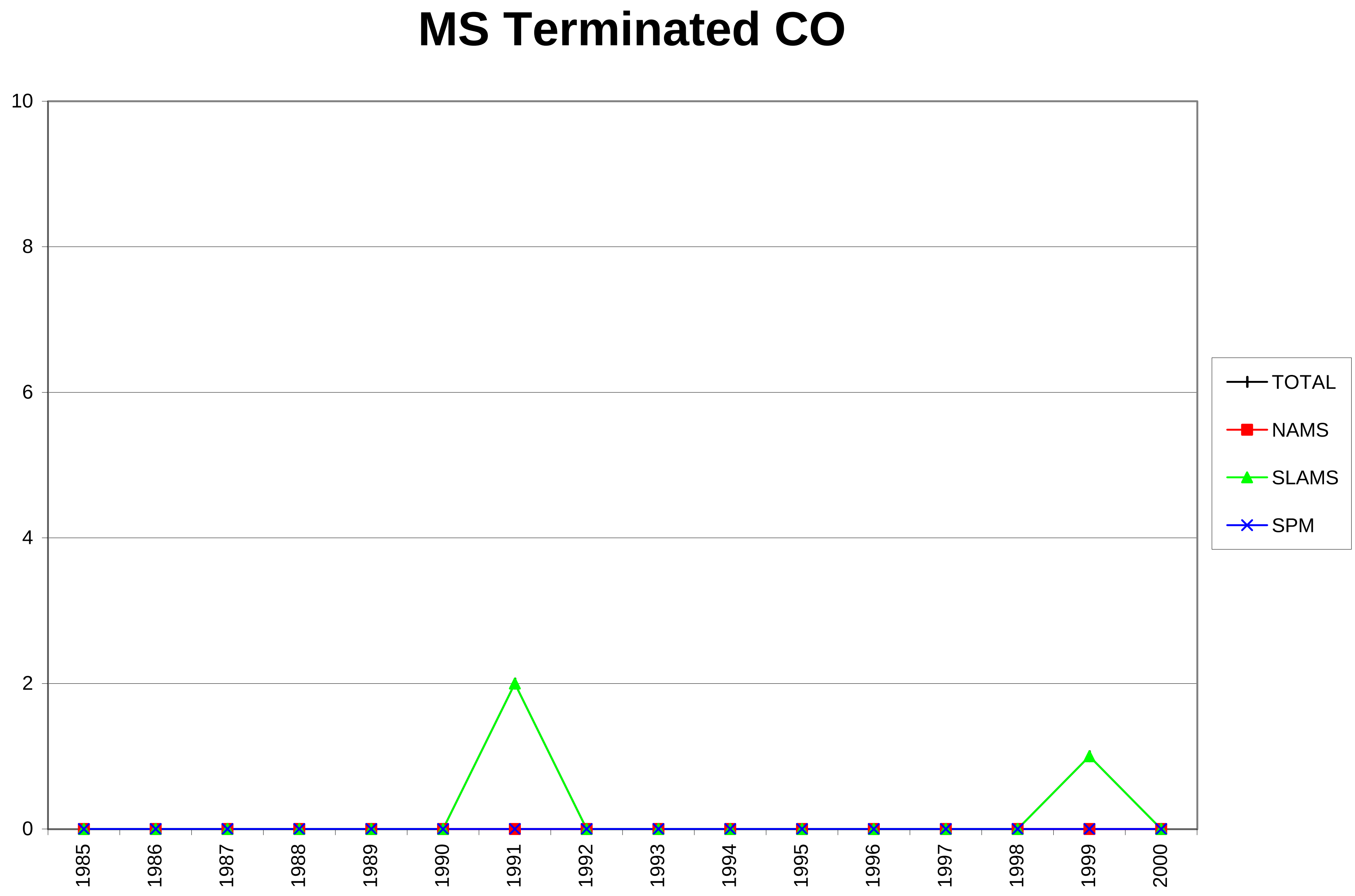
MS Terminated Parameters

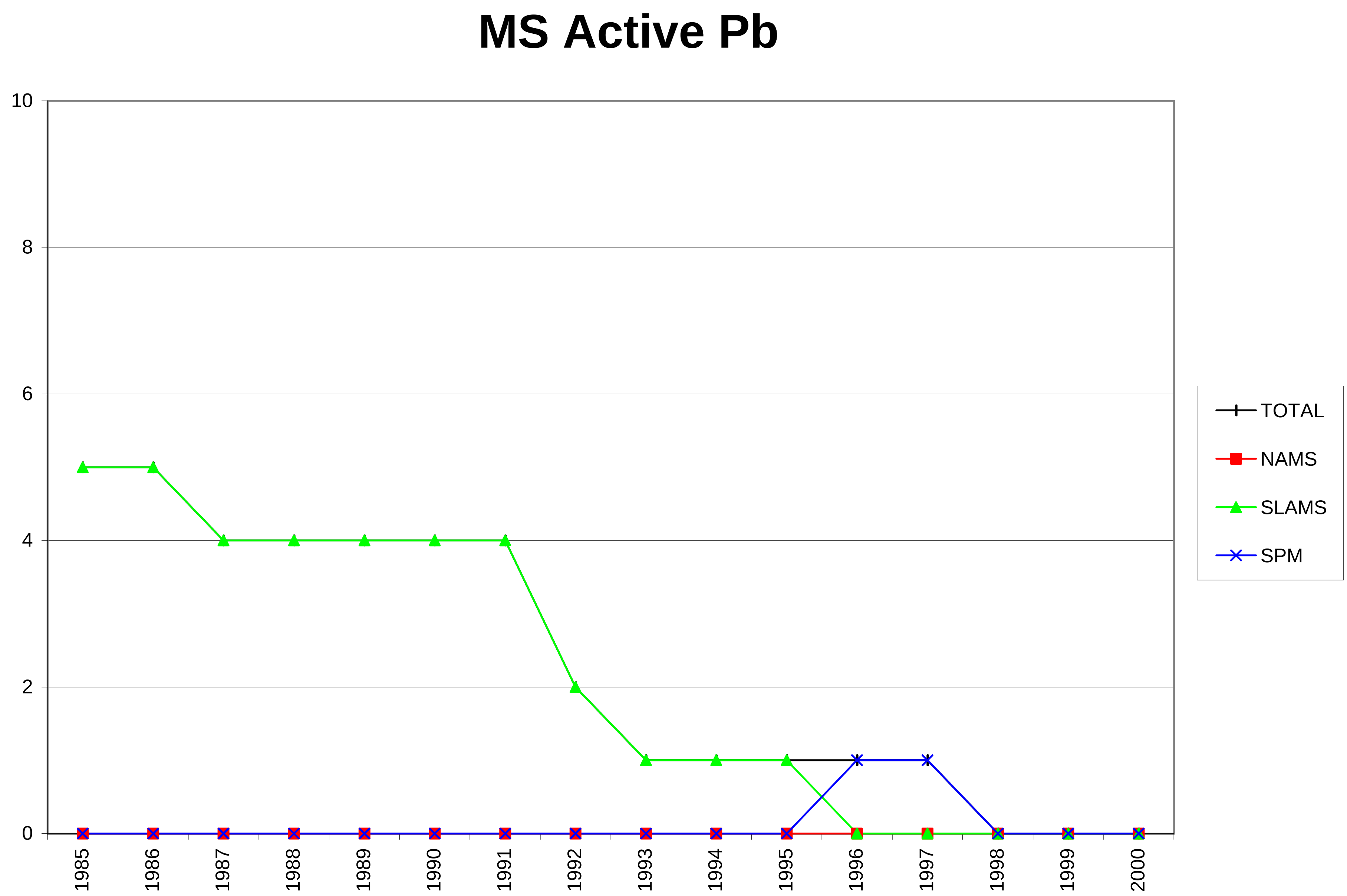


MS Active CO

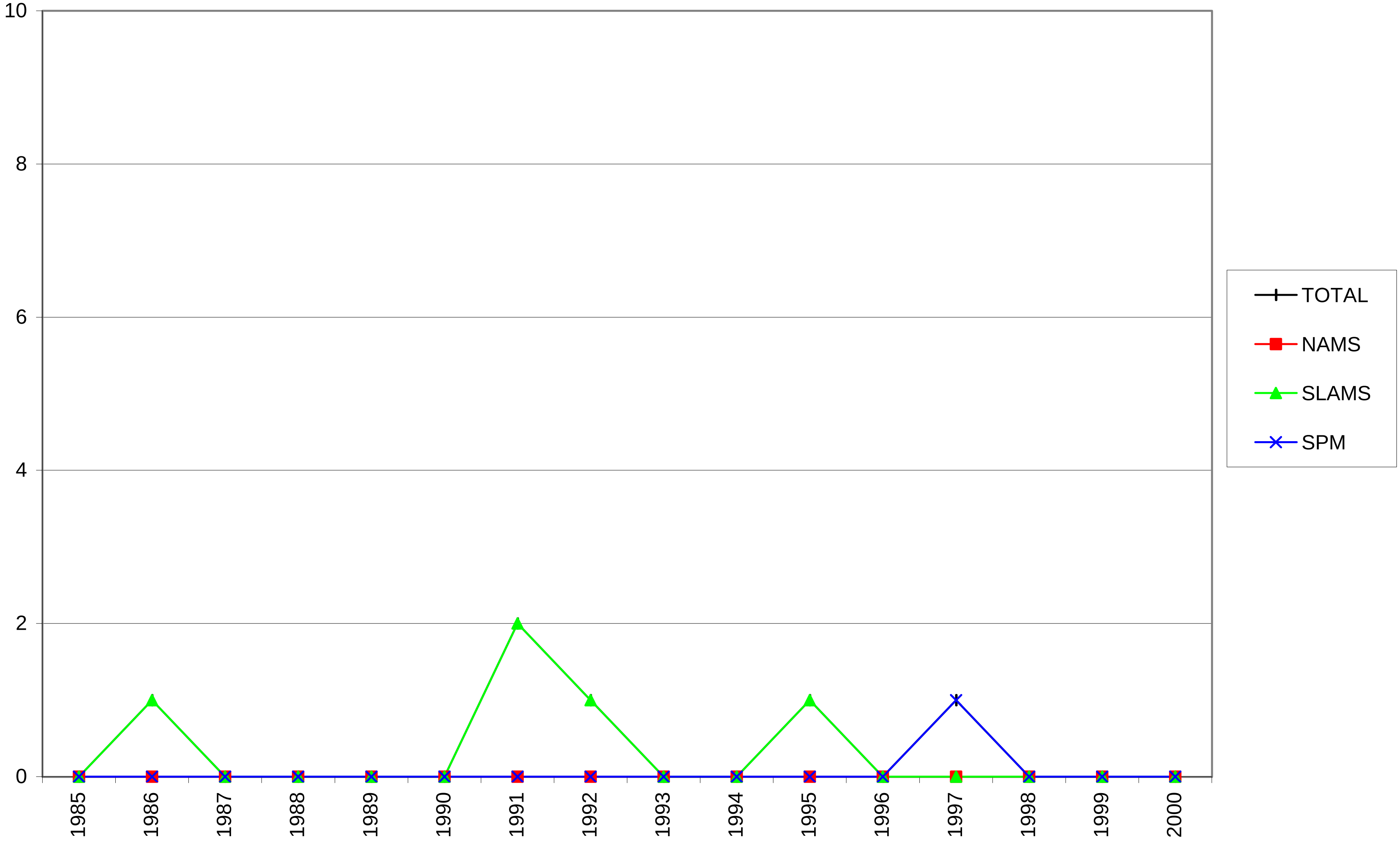


10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

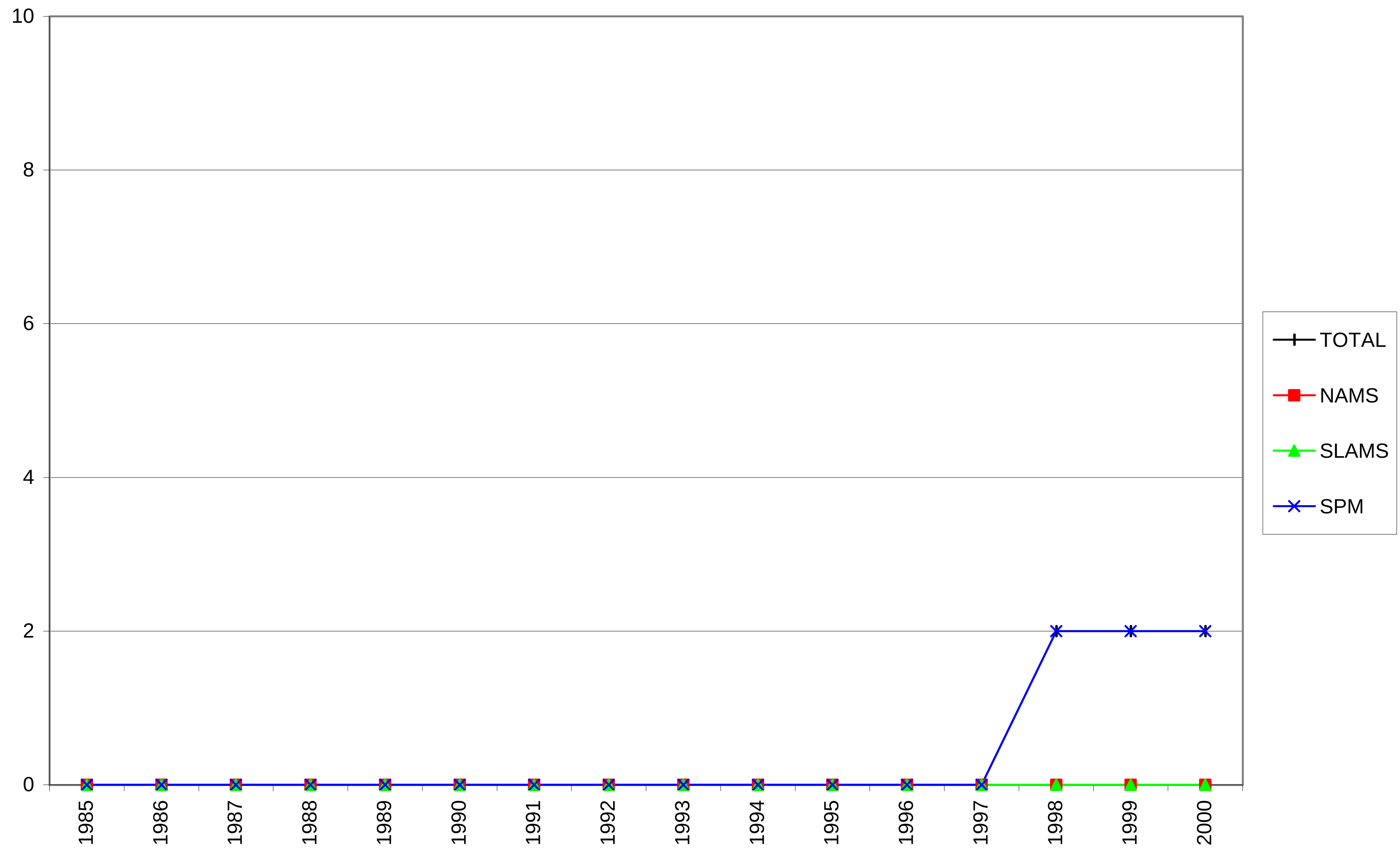

MS Terminated CO
10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM


MS Active Pb
10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

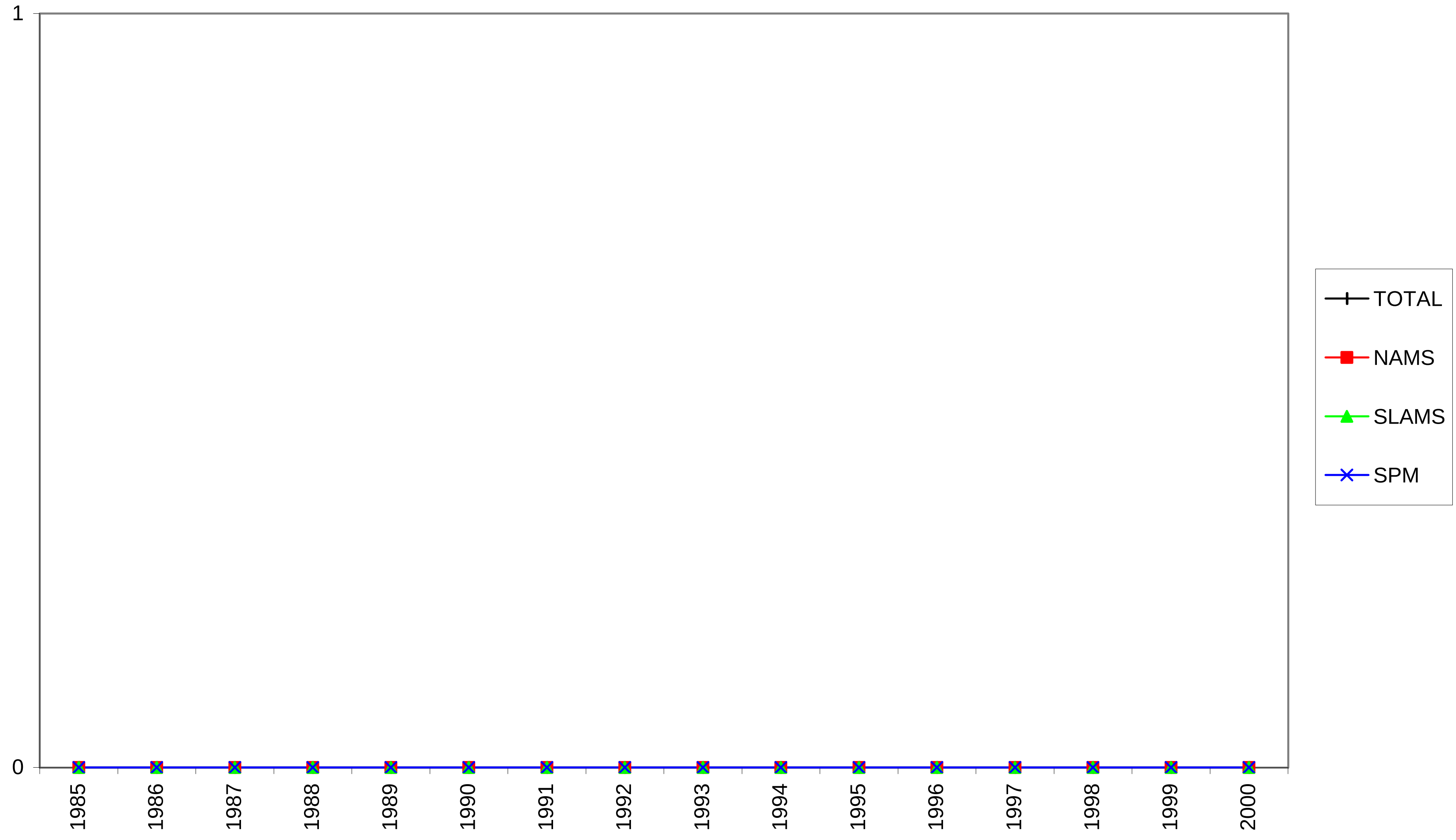
MS Terminated Pb



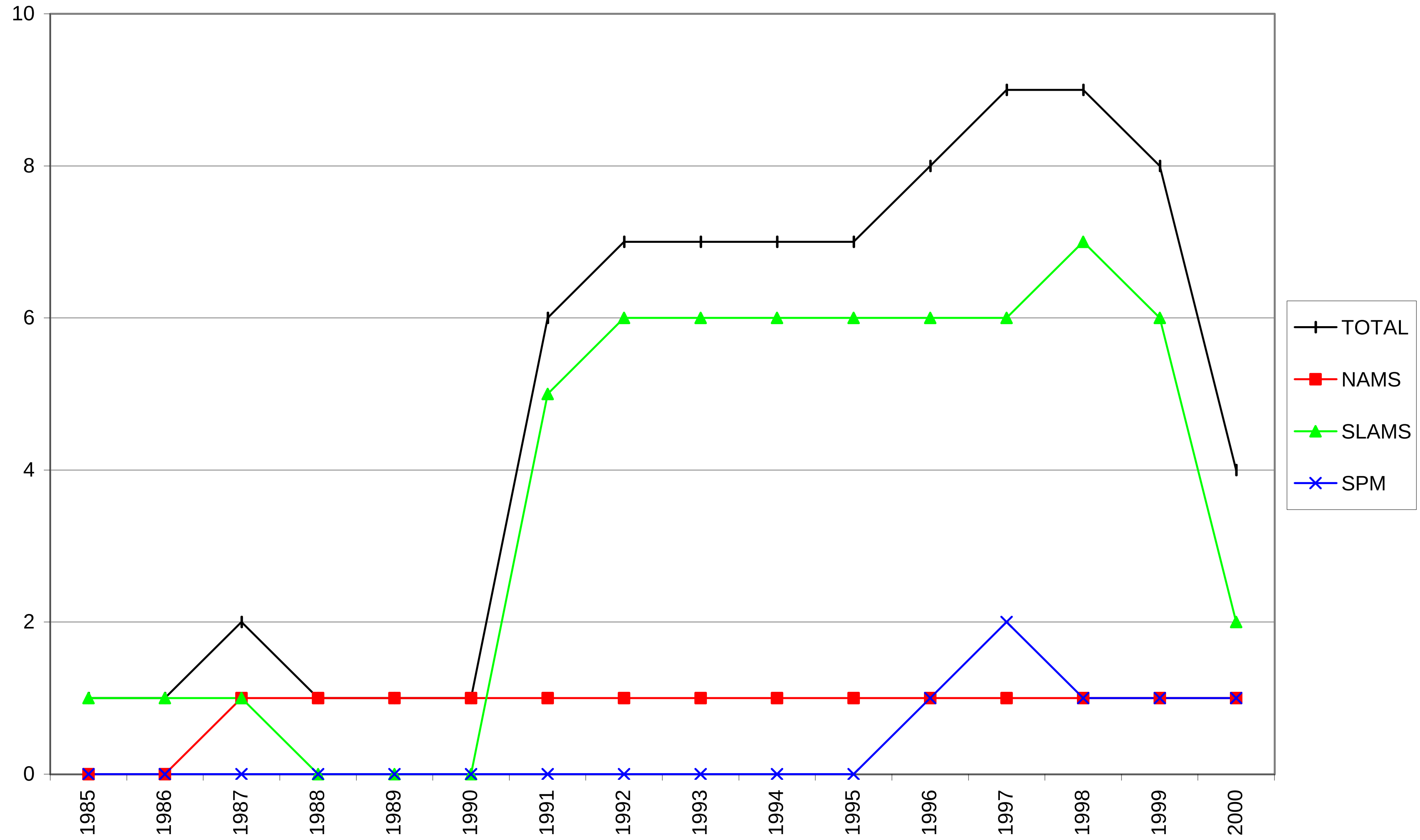
MS Active NO_2



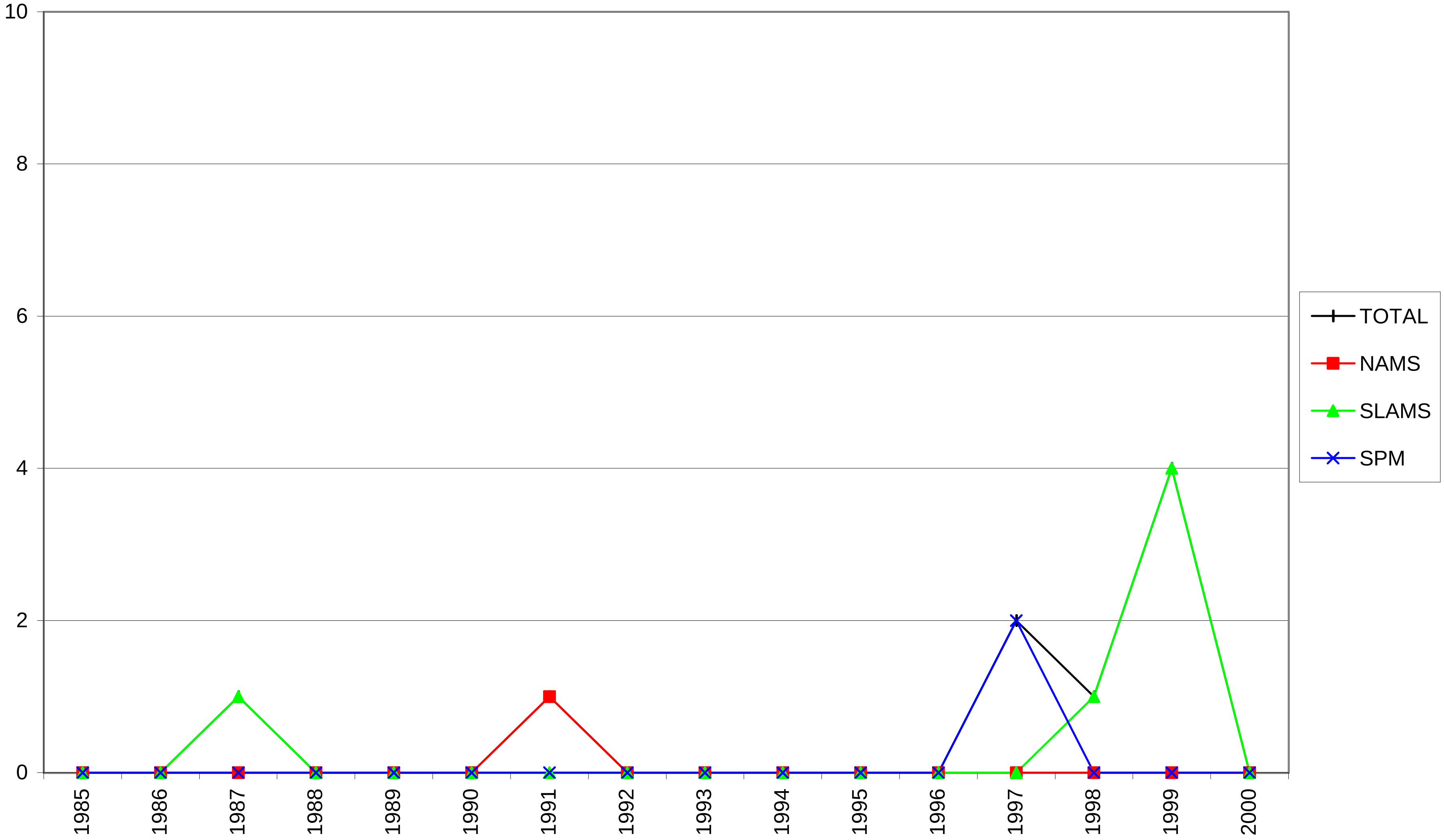
MS Terminated NO_2



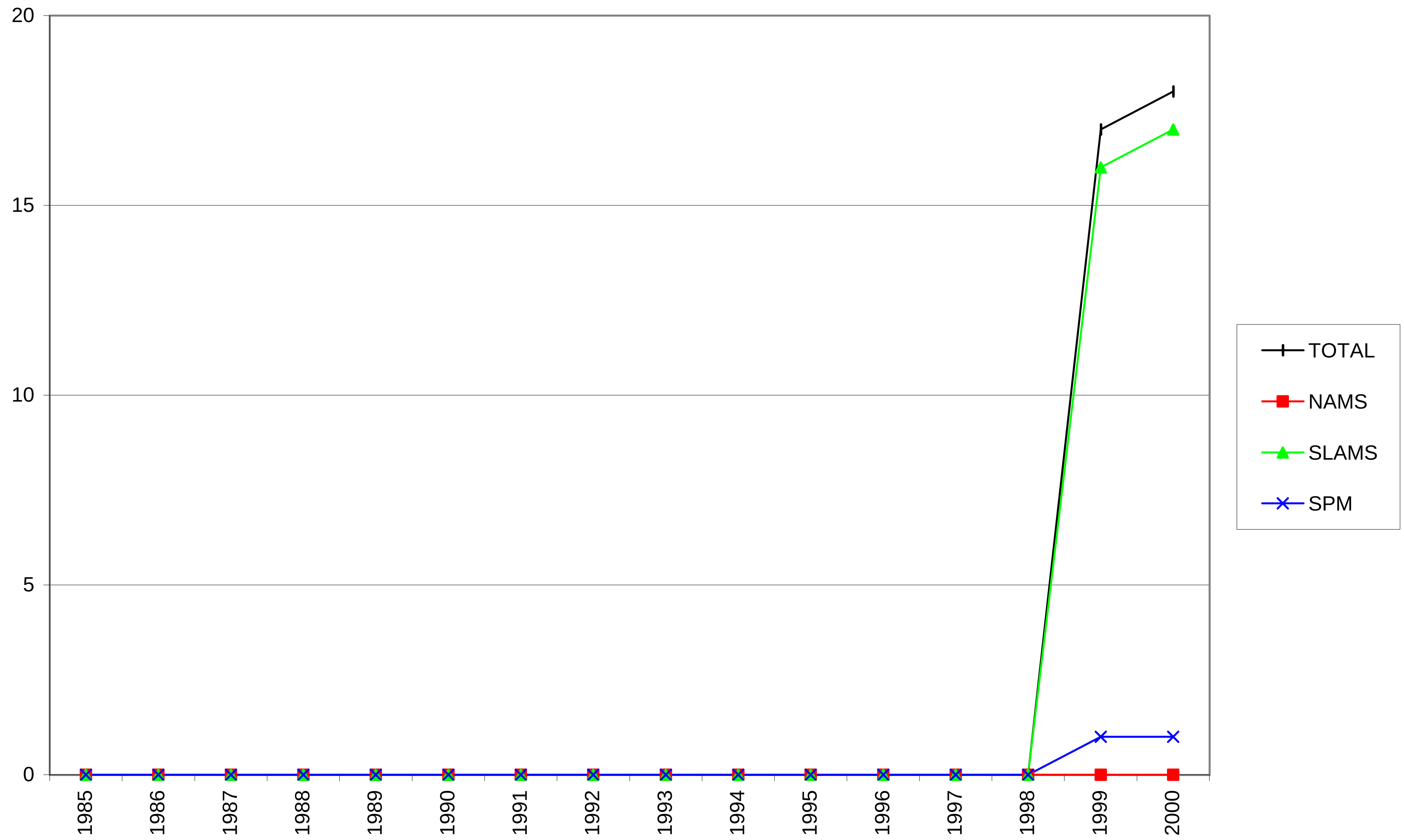
MS Active PM_{10}



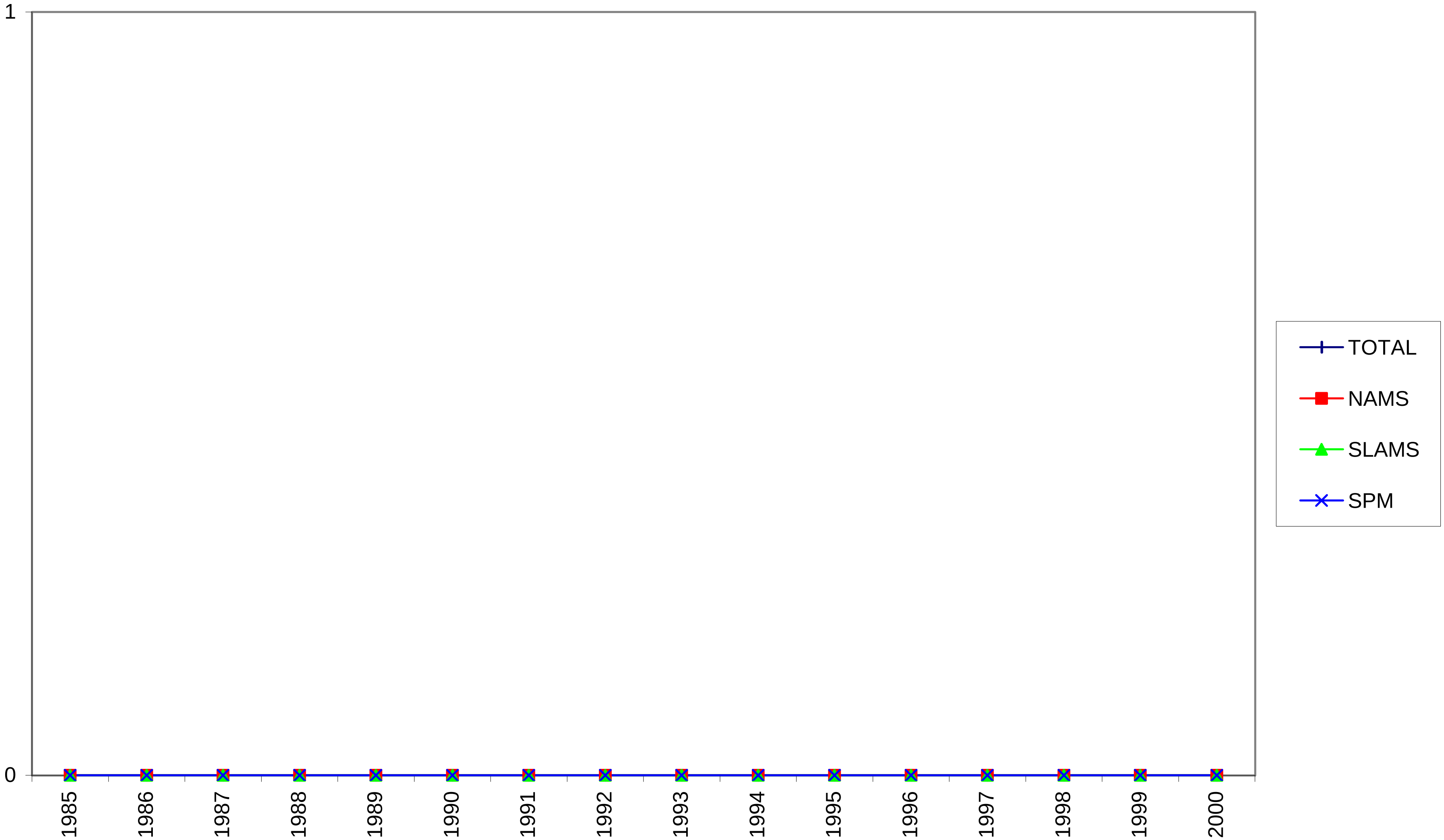
MS Terminated PM_{10}



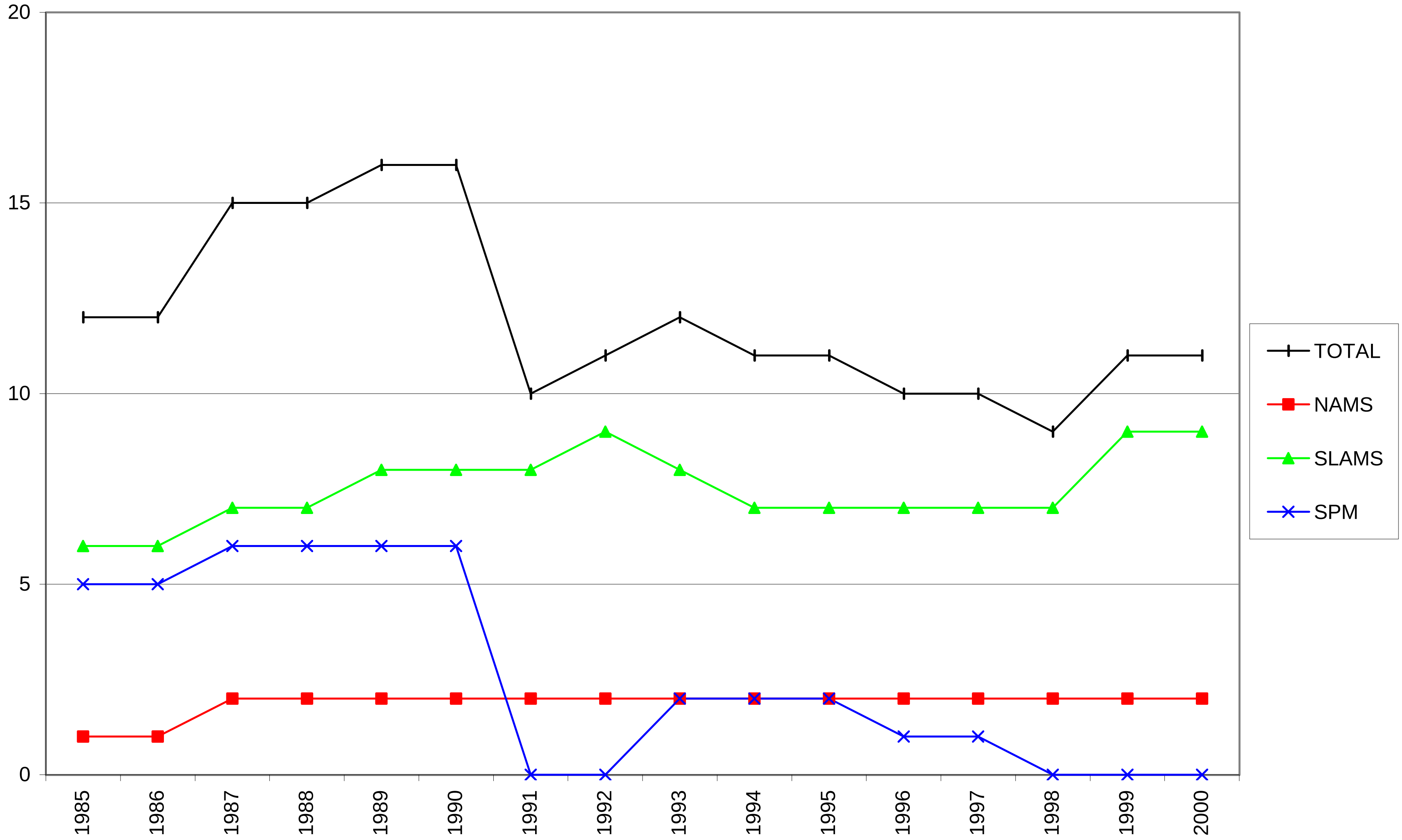
MS Active $PM_{2.5}$



MS Terminated $PM_{2.5}$

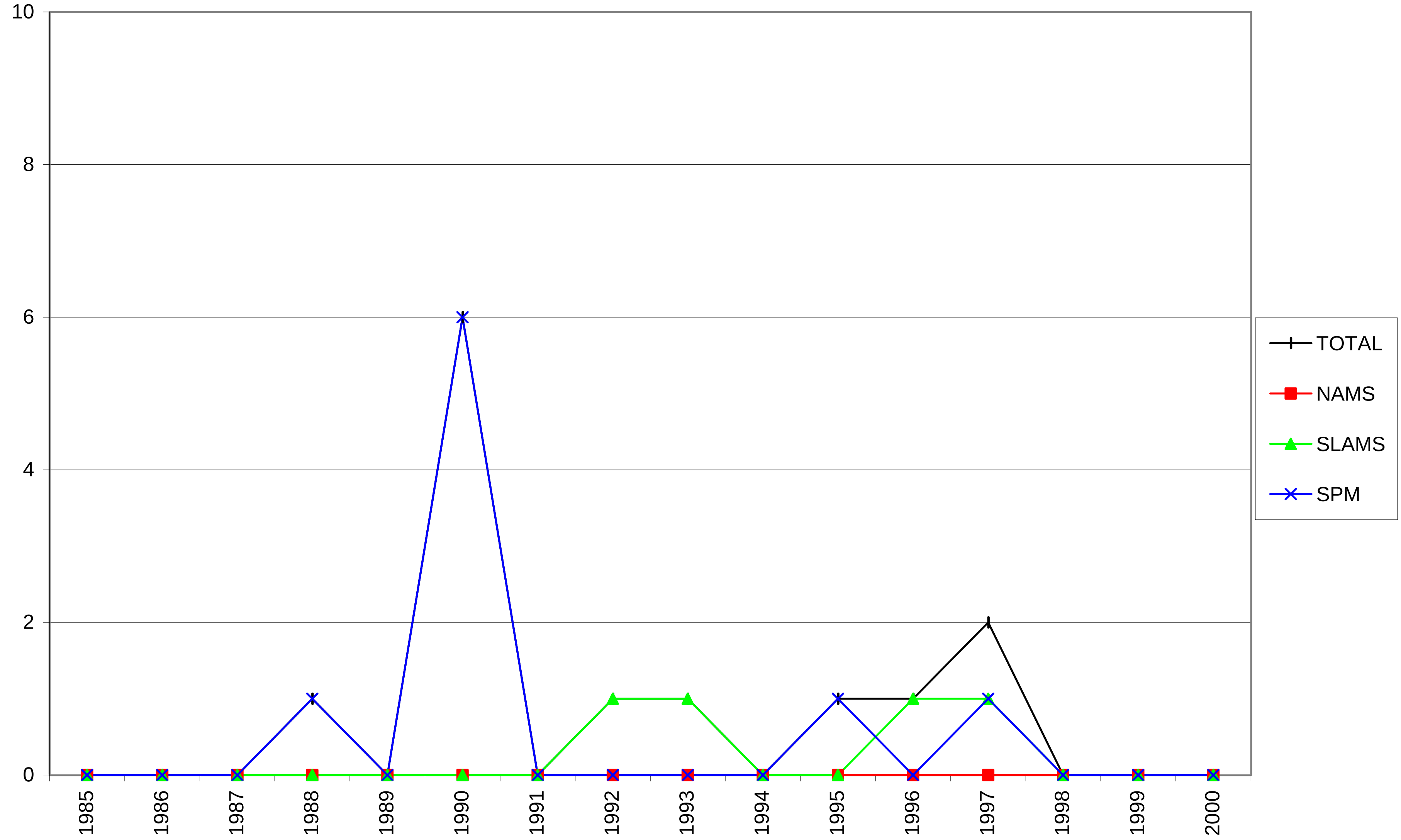


MS Active O_3

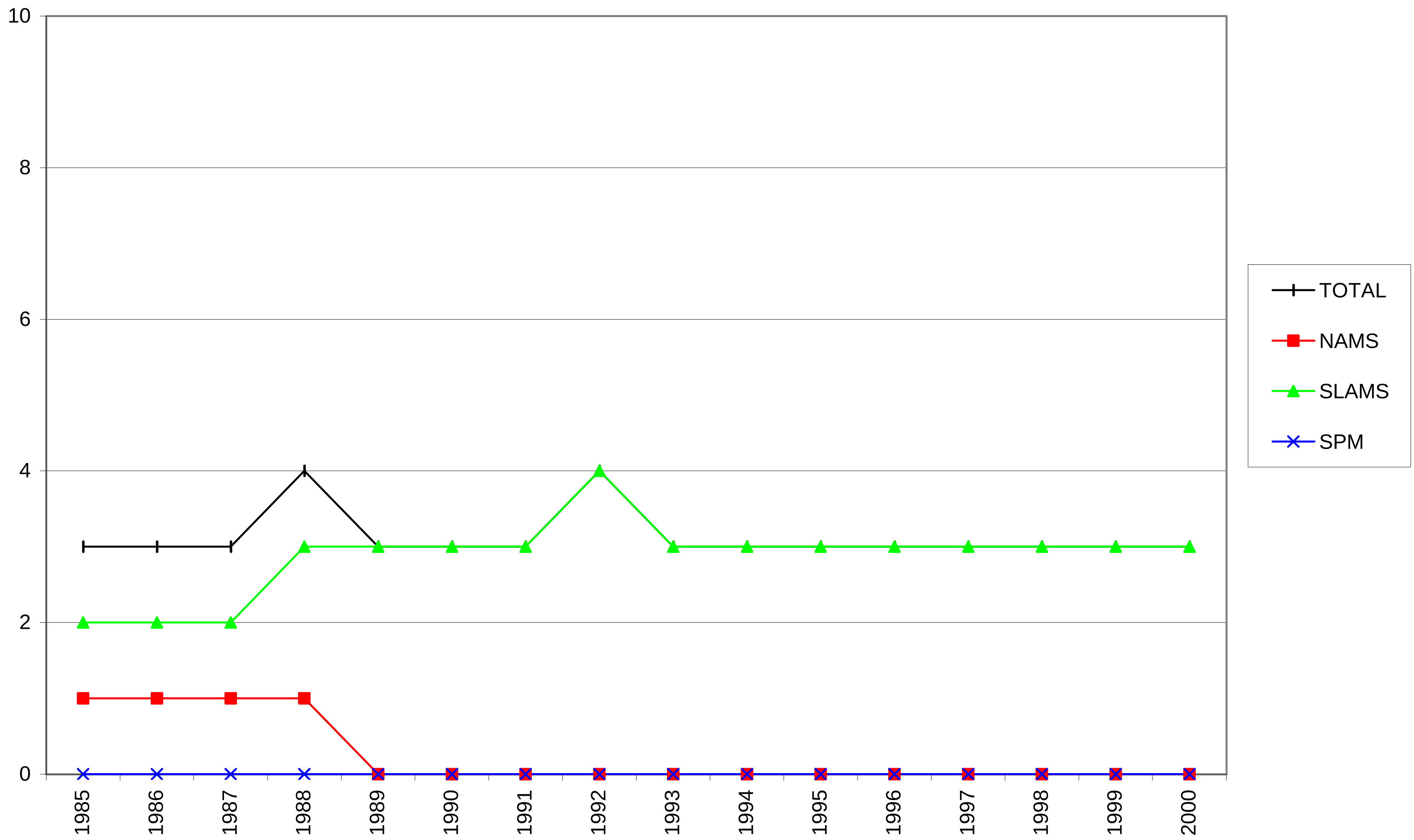


20
15
10
5
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

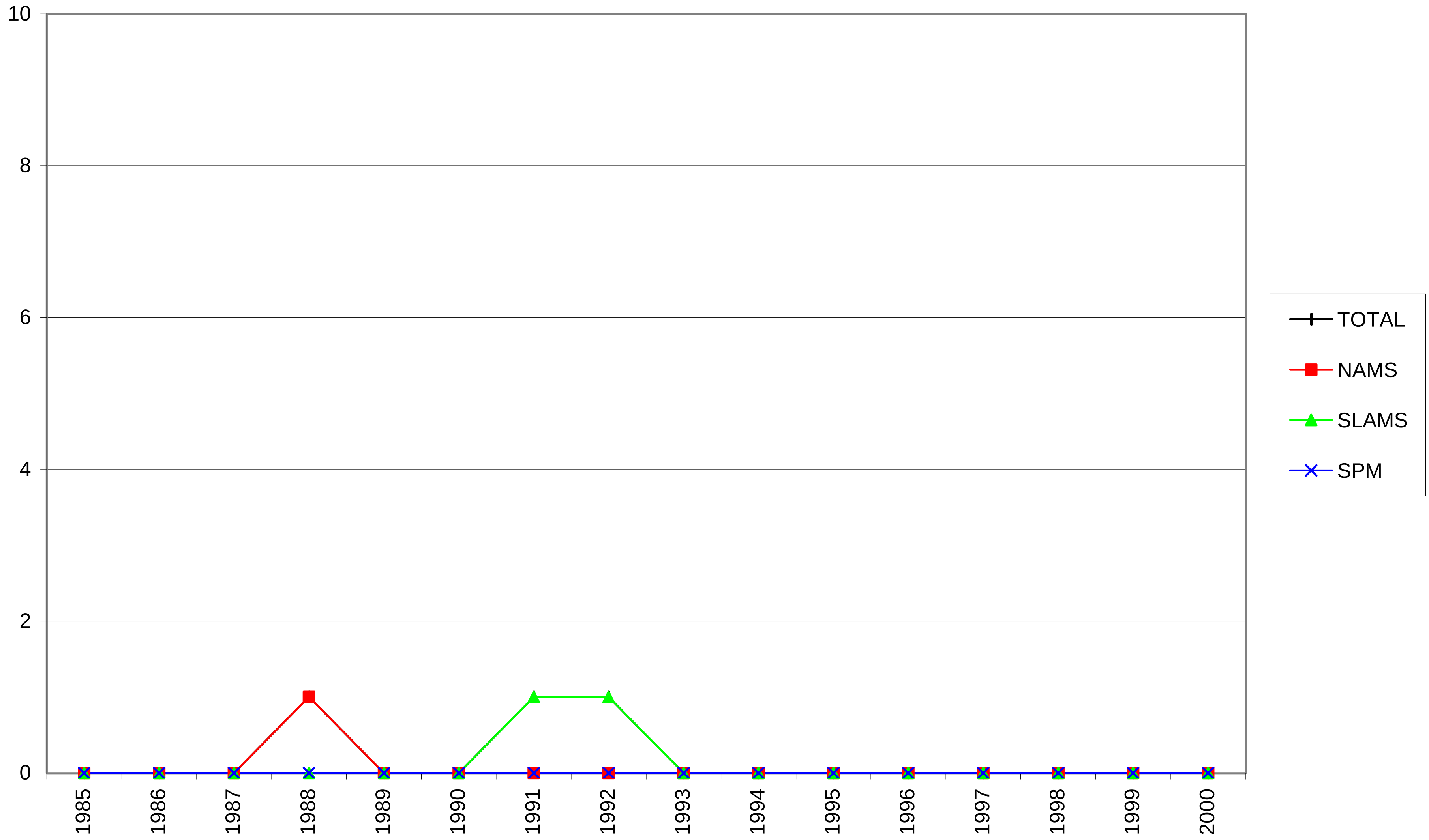
MS Terminated O_3

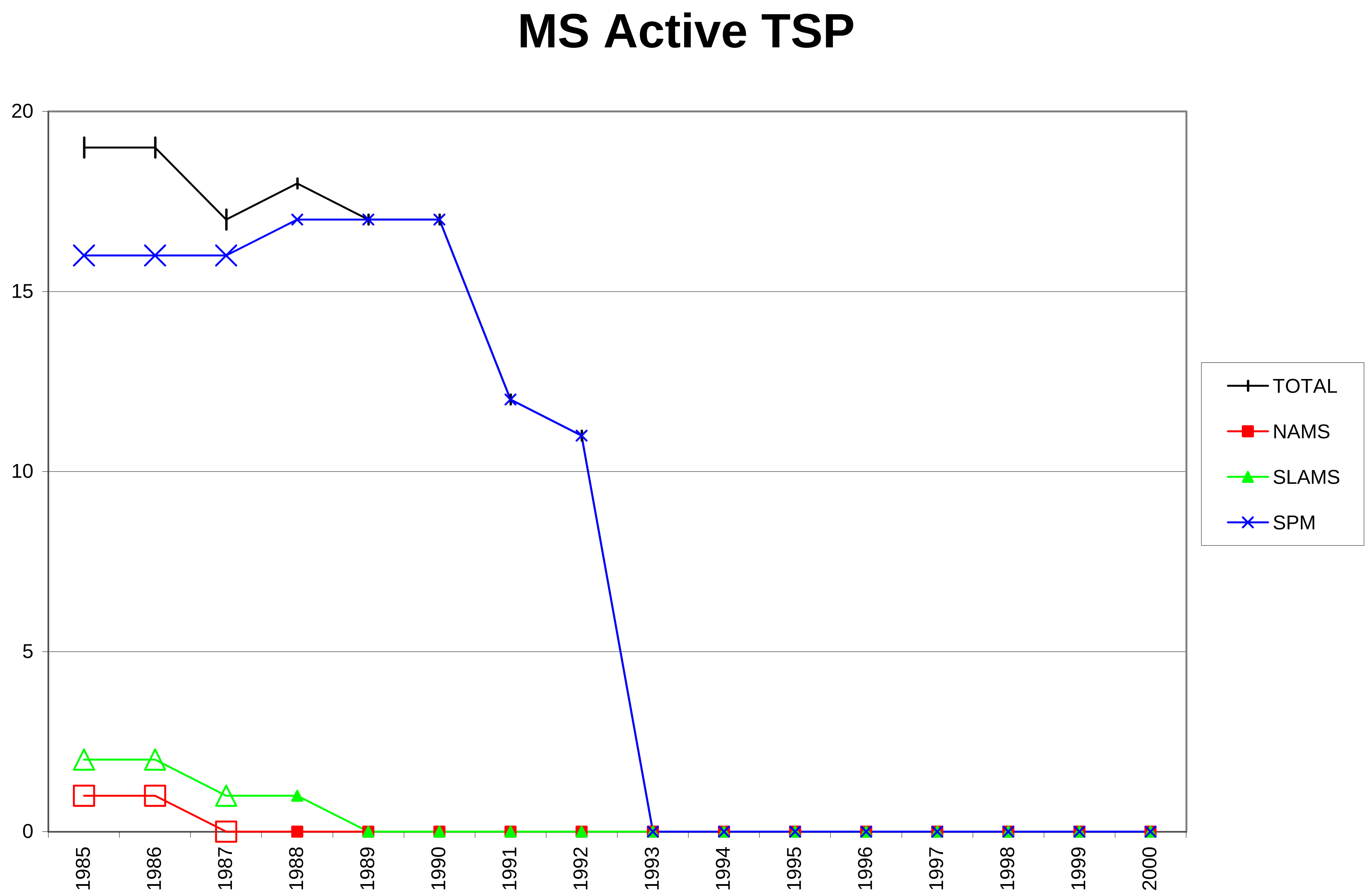


MS Active SO_2



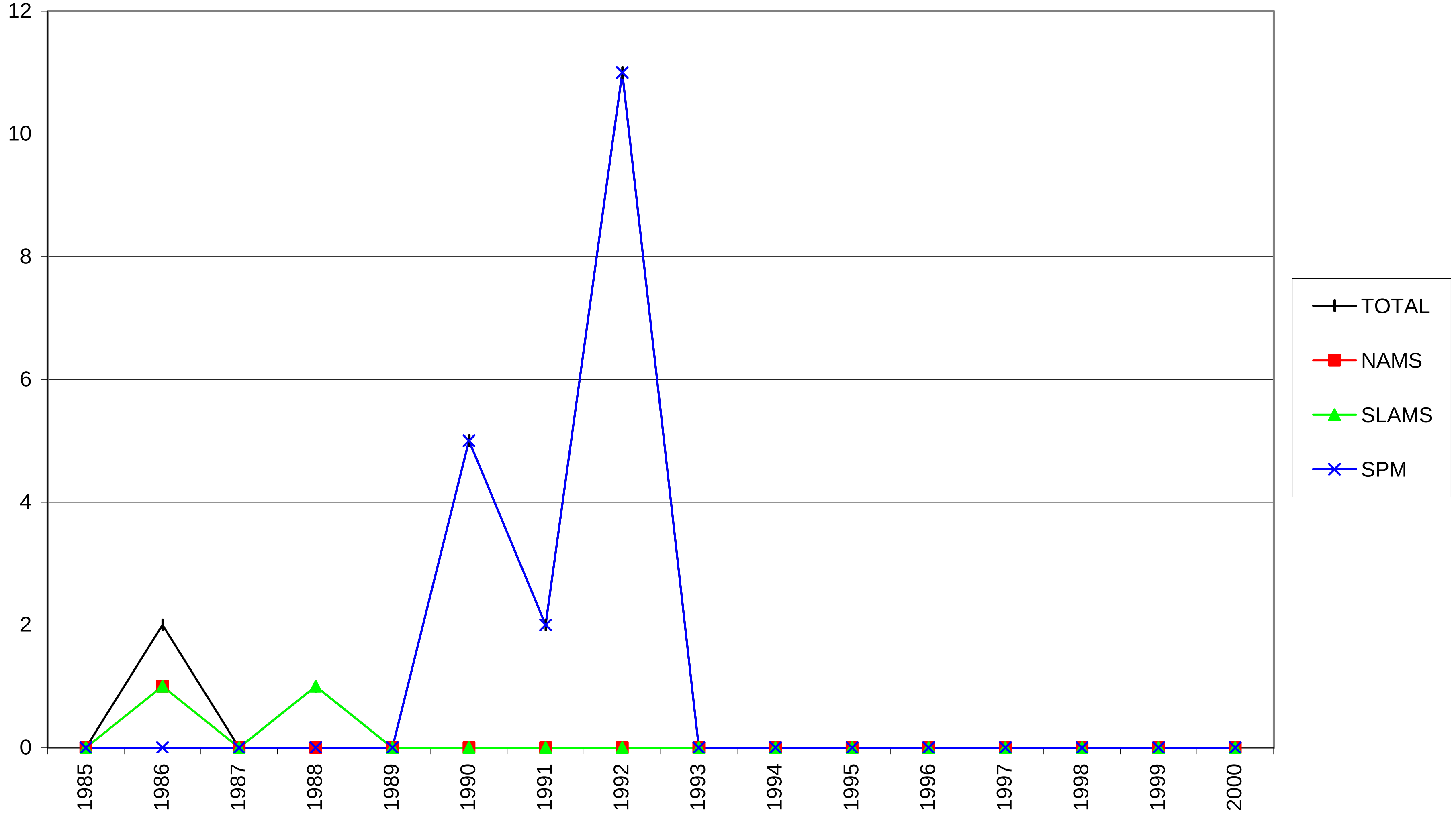
MS Terminated SO_2



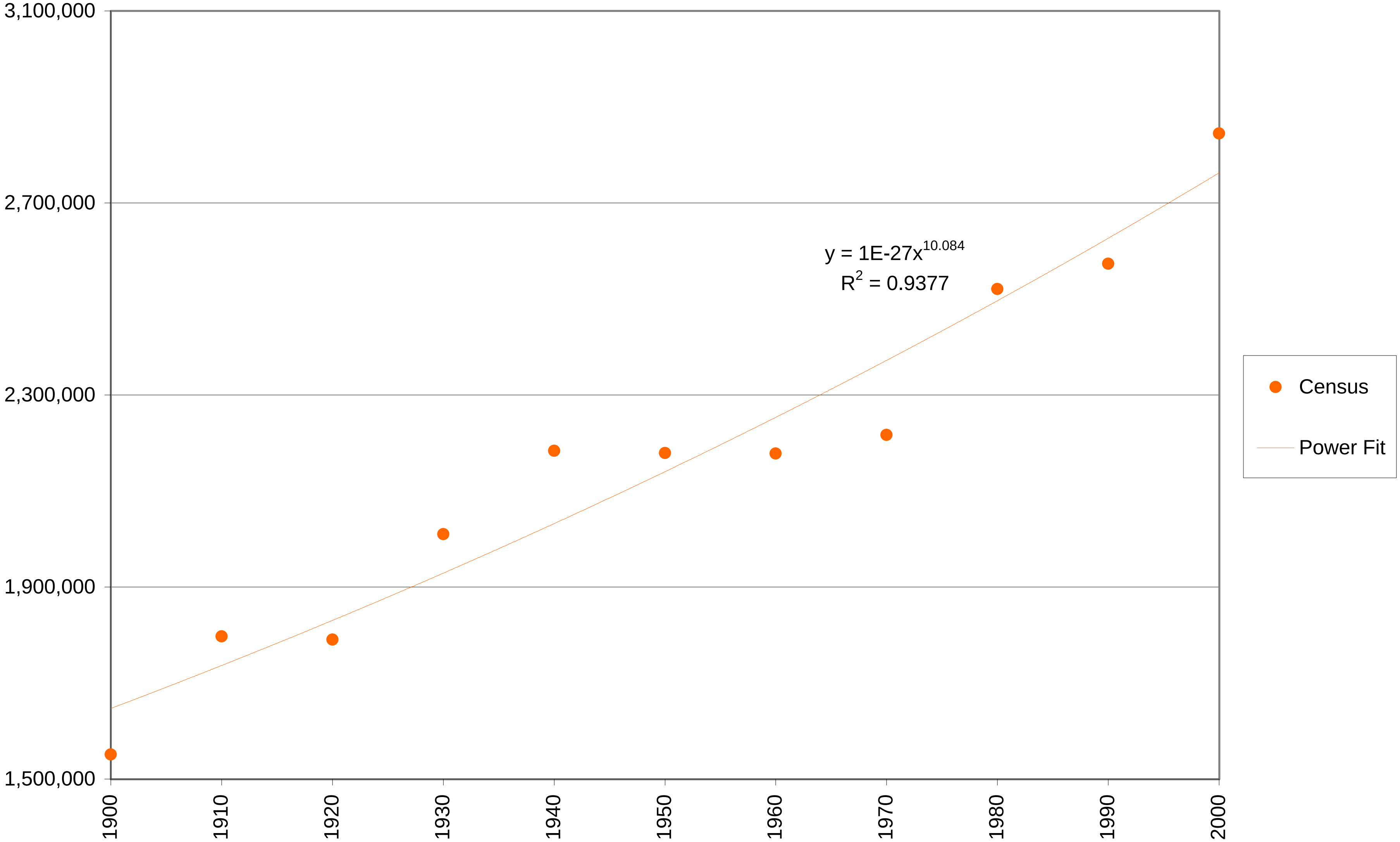


MS Active TSP
20
15
10
5
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

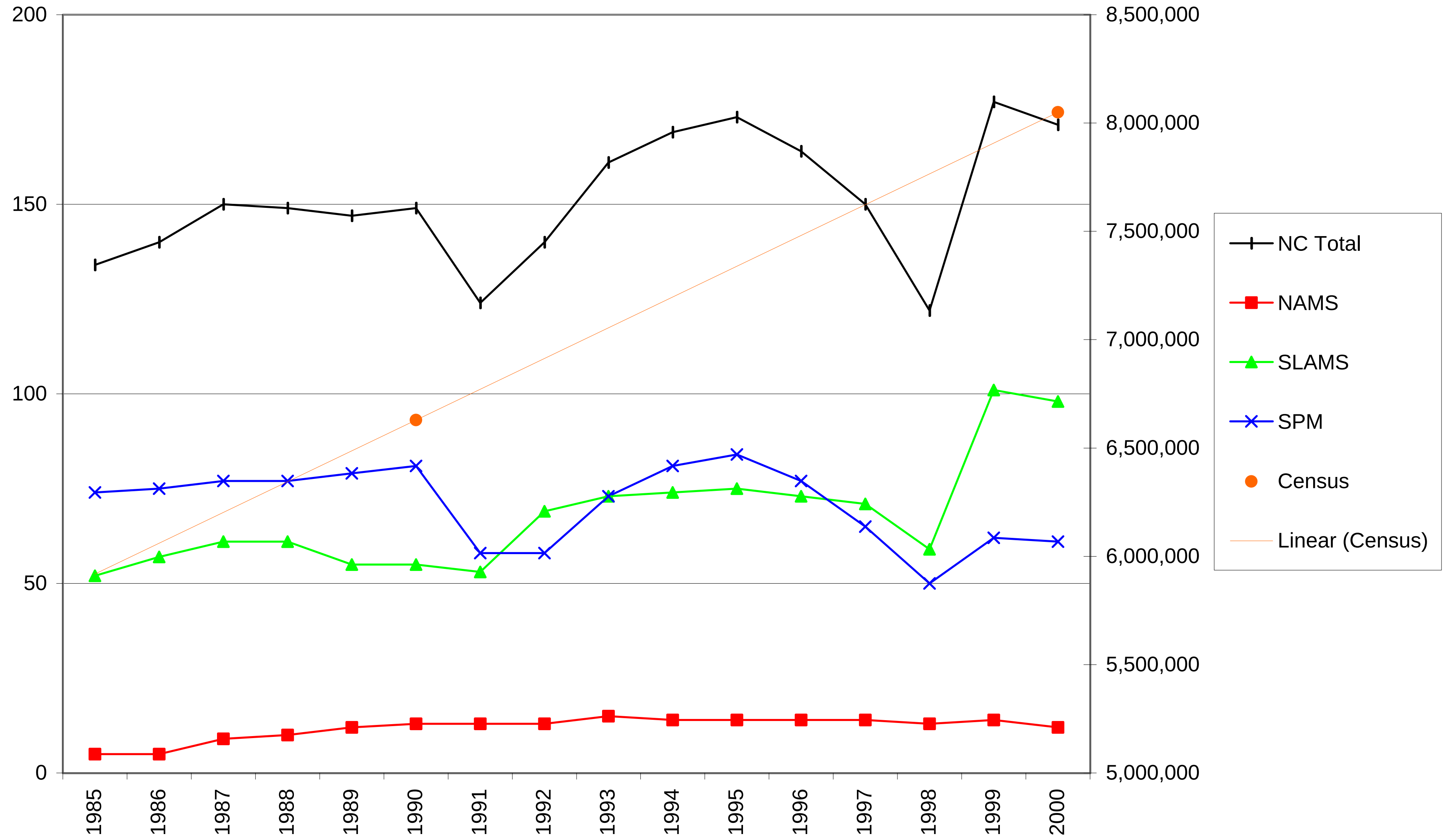
MS Terminated TSP

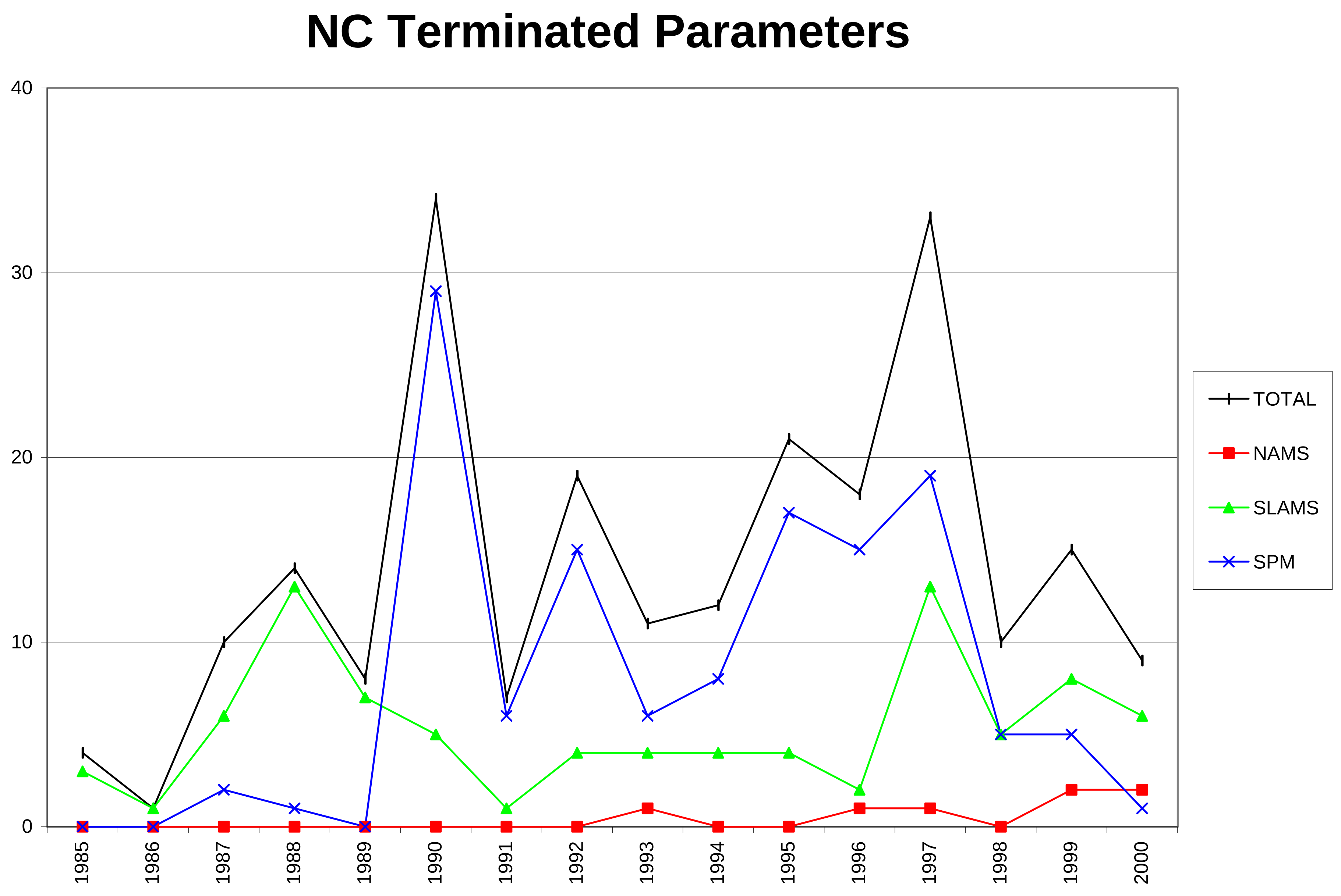


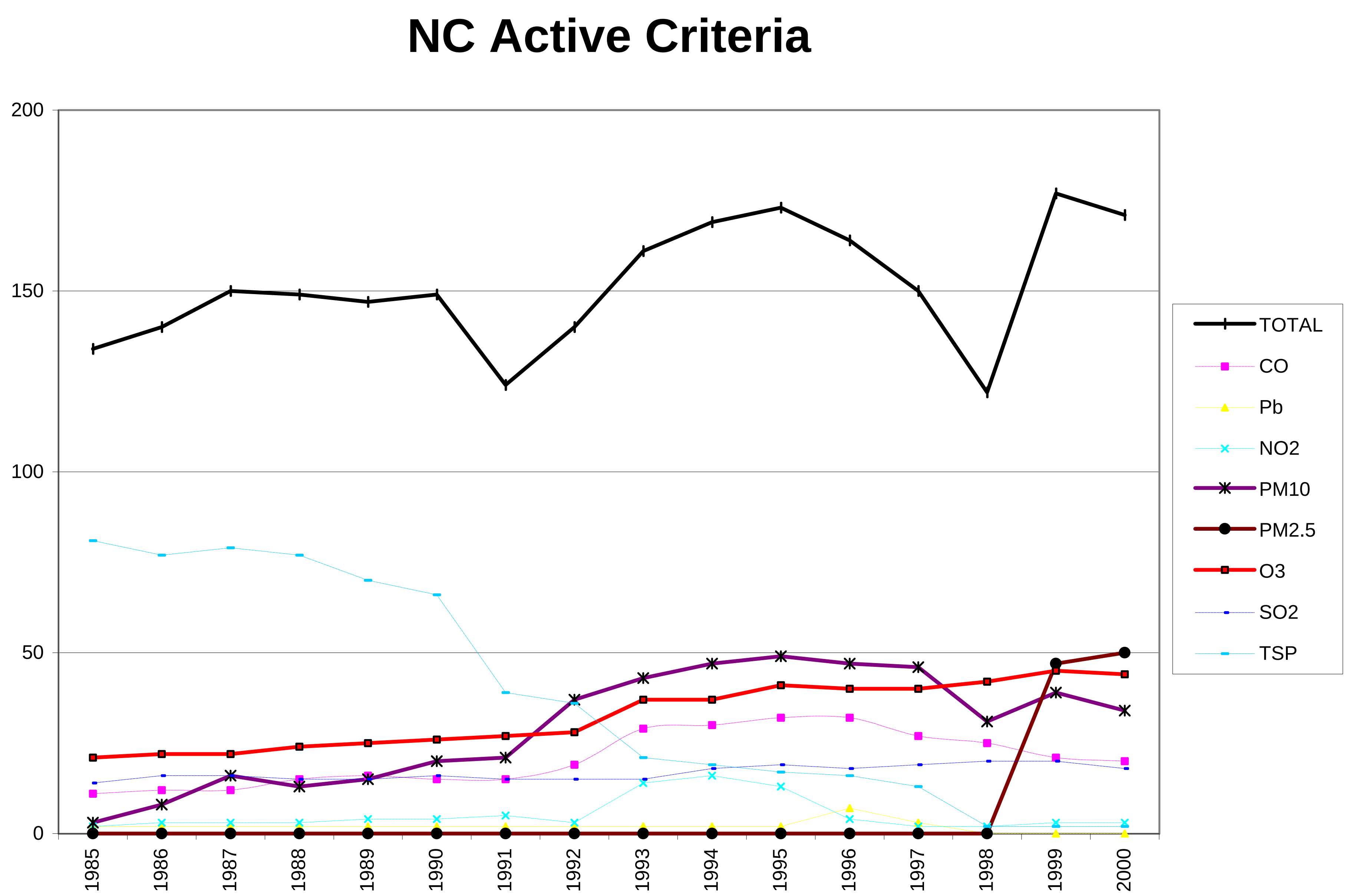
Mississippi Population Growth

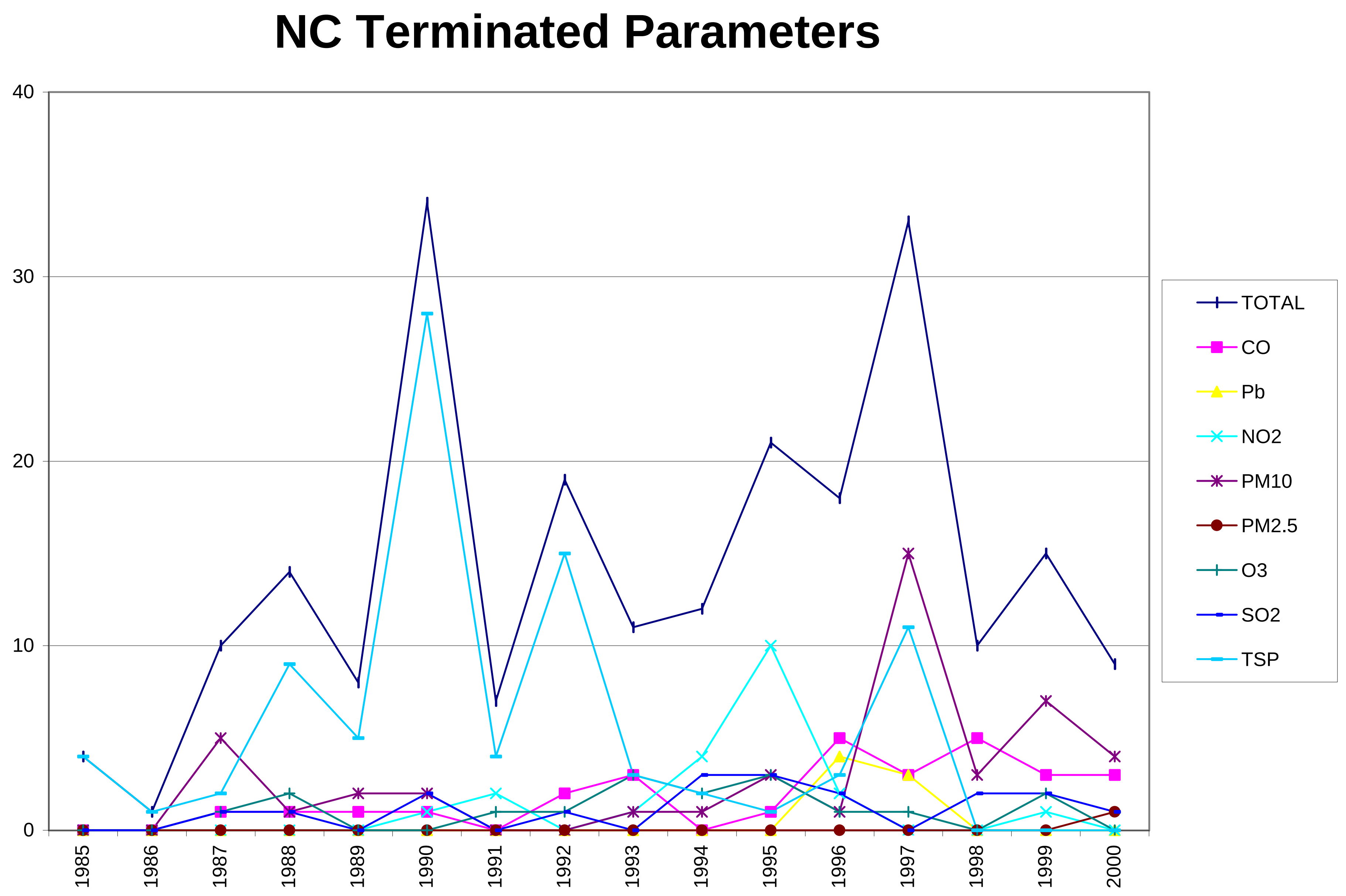


North Carolina Active Criteria

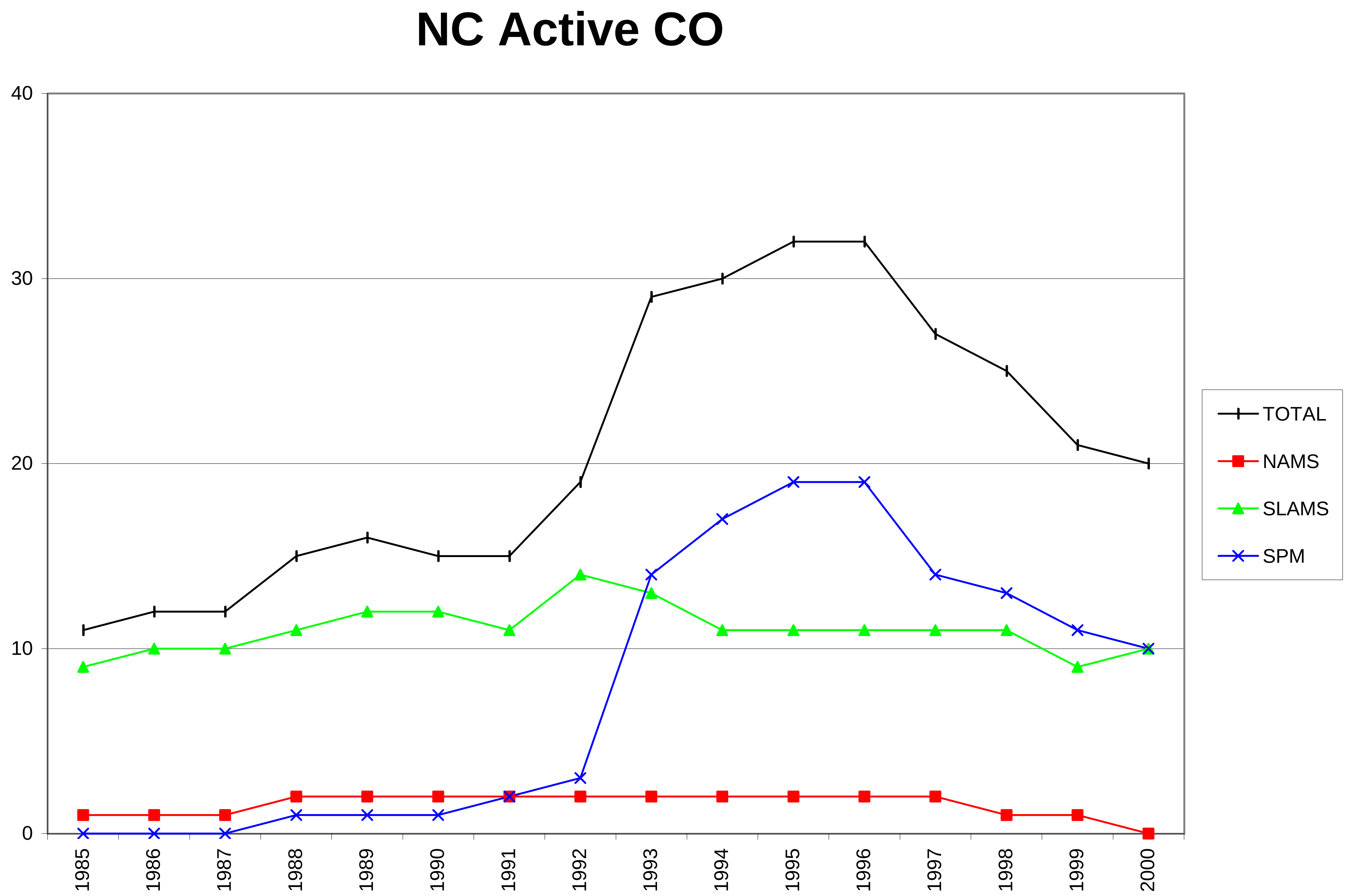


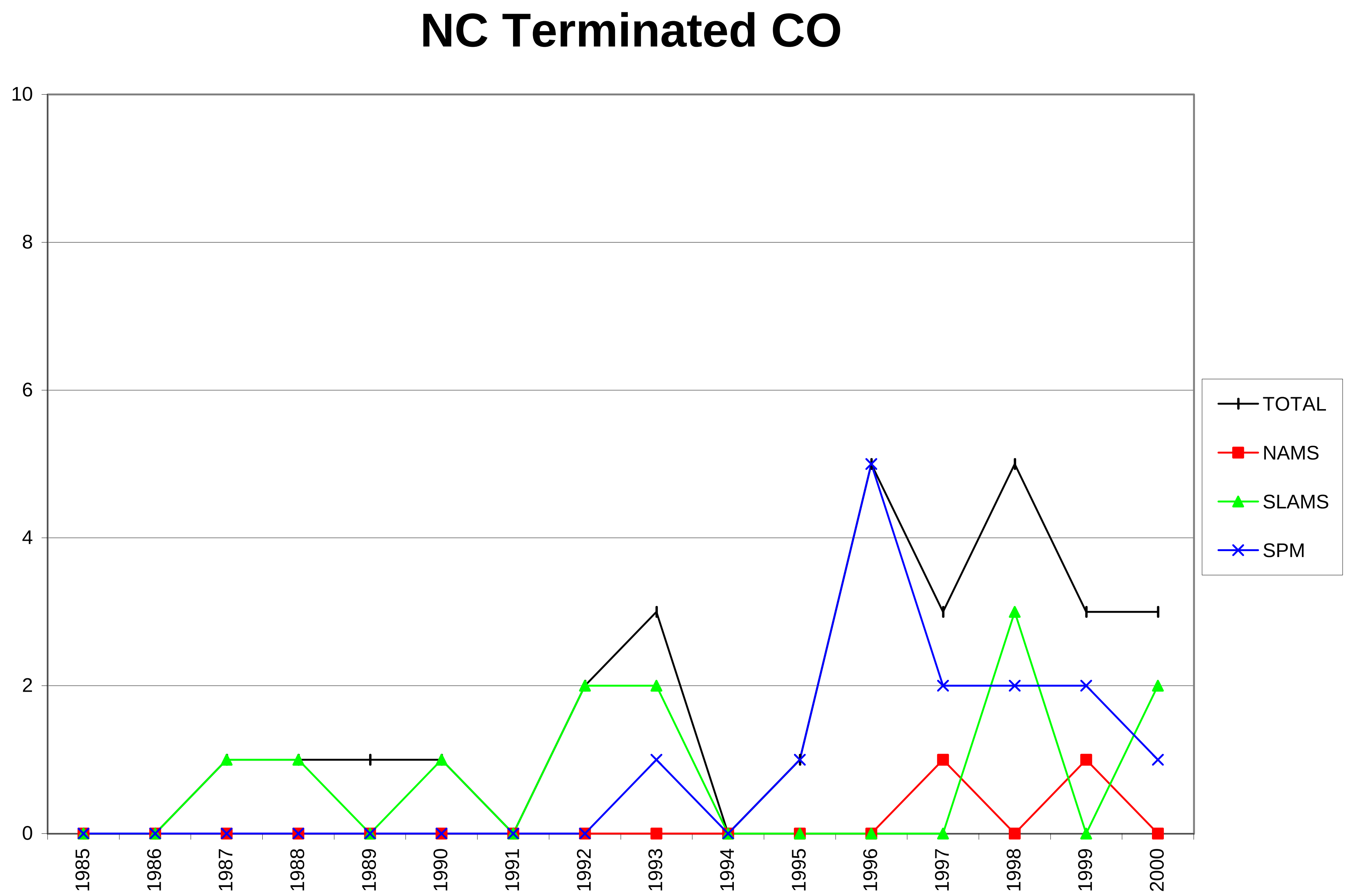

NC Terminated Parameters
40
30
20
10
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM


NC Active Criteria
200
150
100
50
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
CO
Pb
NO2
PM10
PM2.5
O3
SO2
TSP

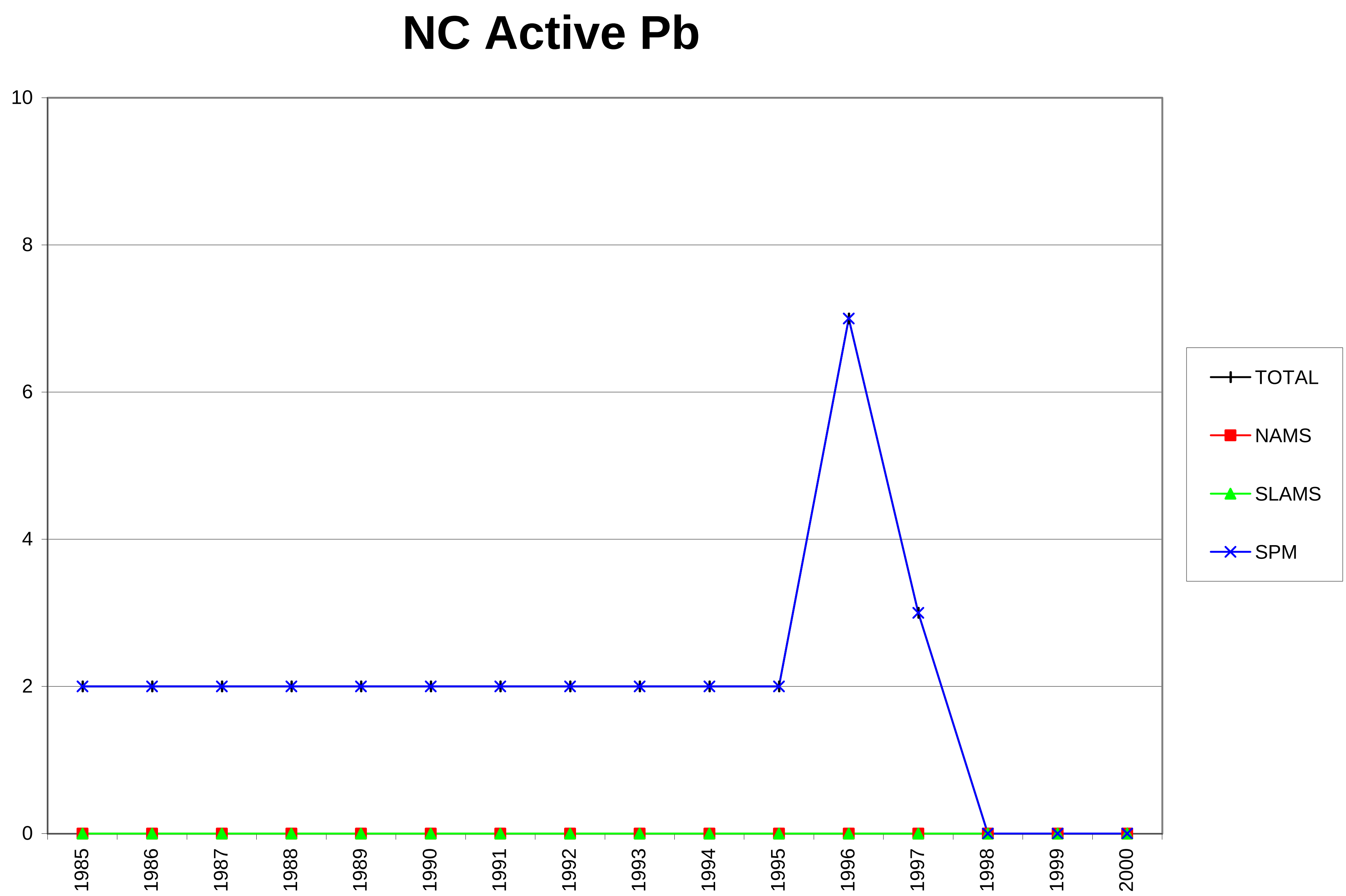


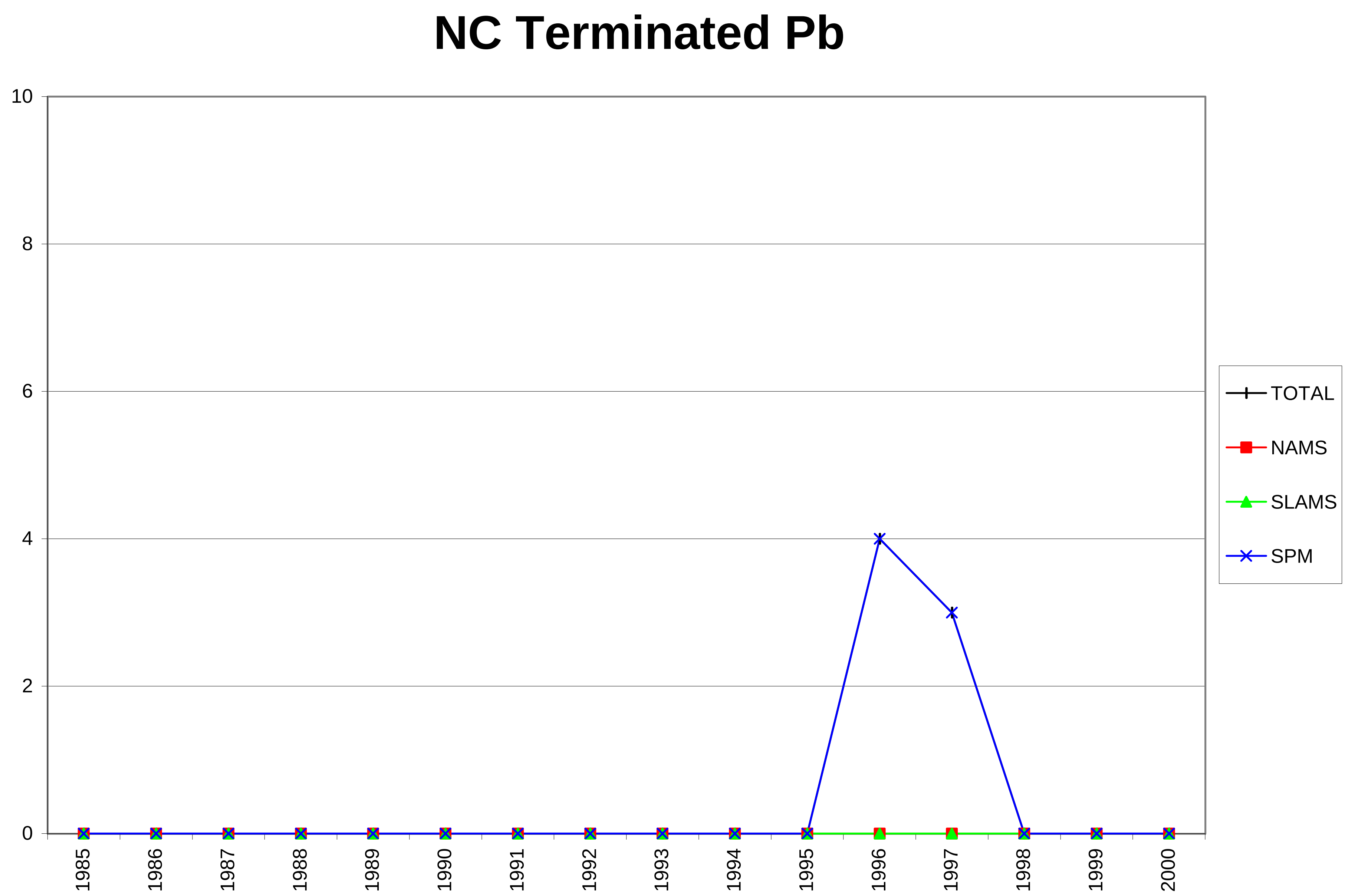
NC Terminated Parameters
40
30
20
10
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
CO
Pb
NO2
PM10
PM2.5
O3
SO2
TSP


NC Active CO
40
30
20
10
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

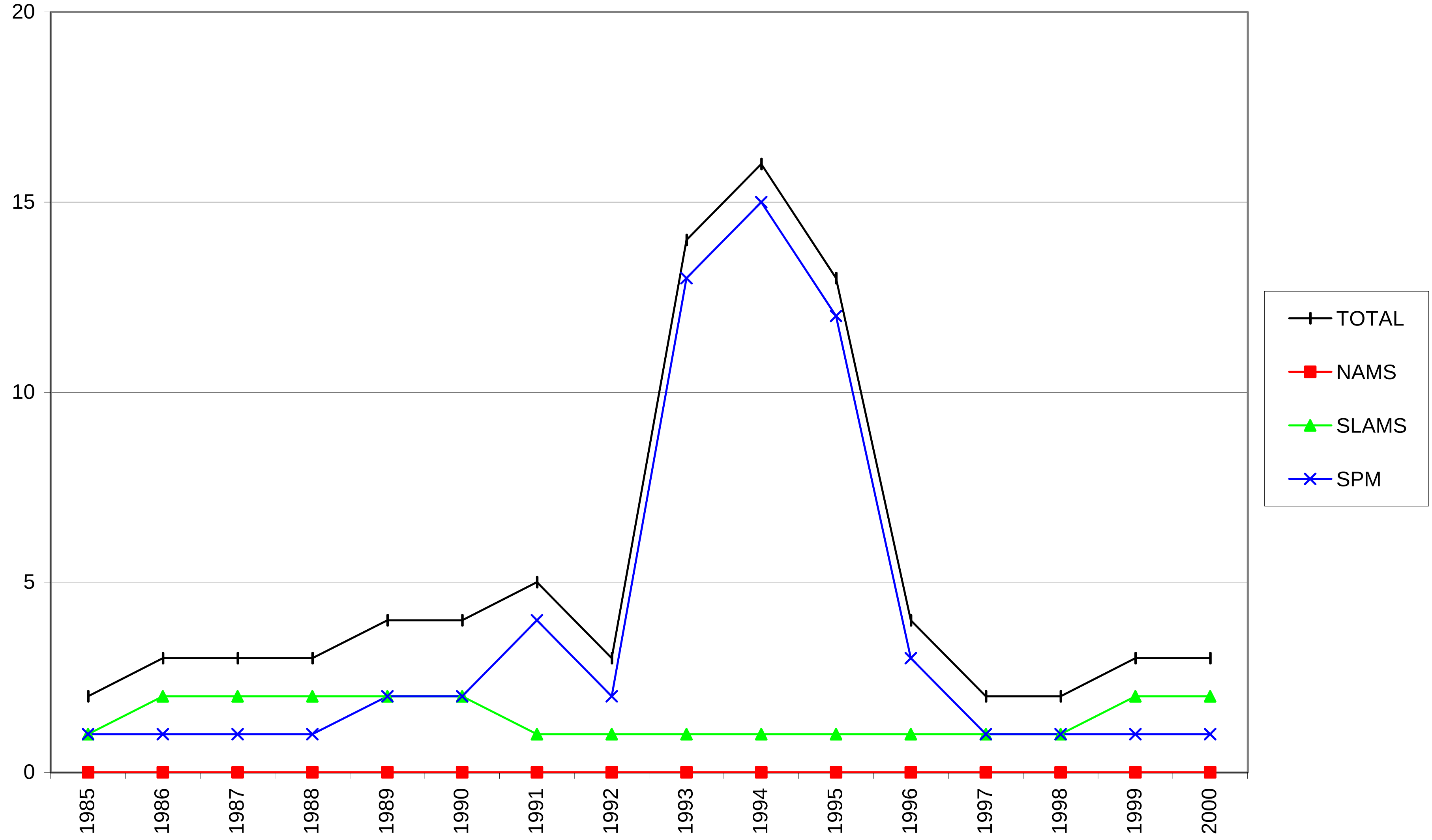


NC Terminated CO
10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

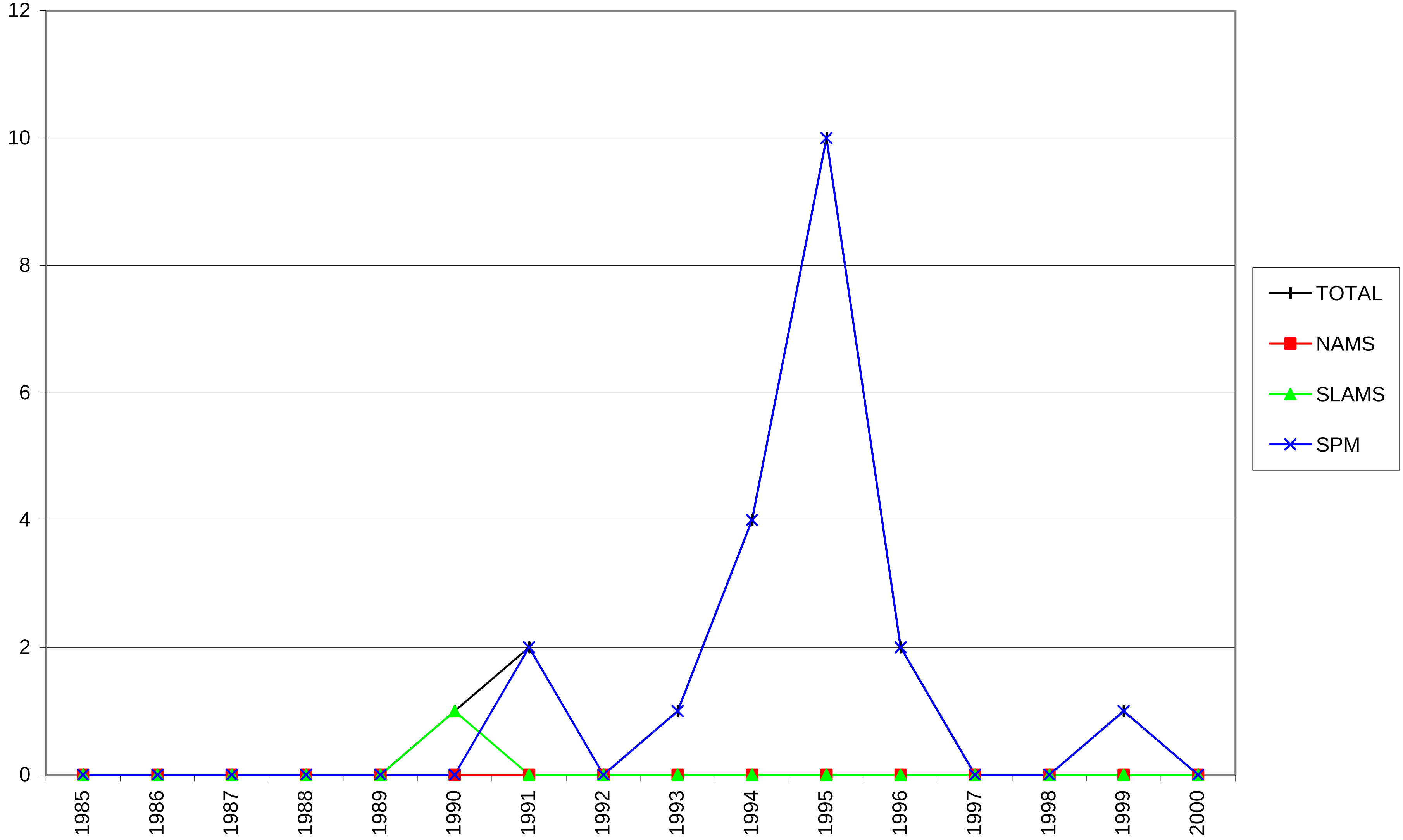

NC Active Pb
10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM


NC Terminated Pb
10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

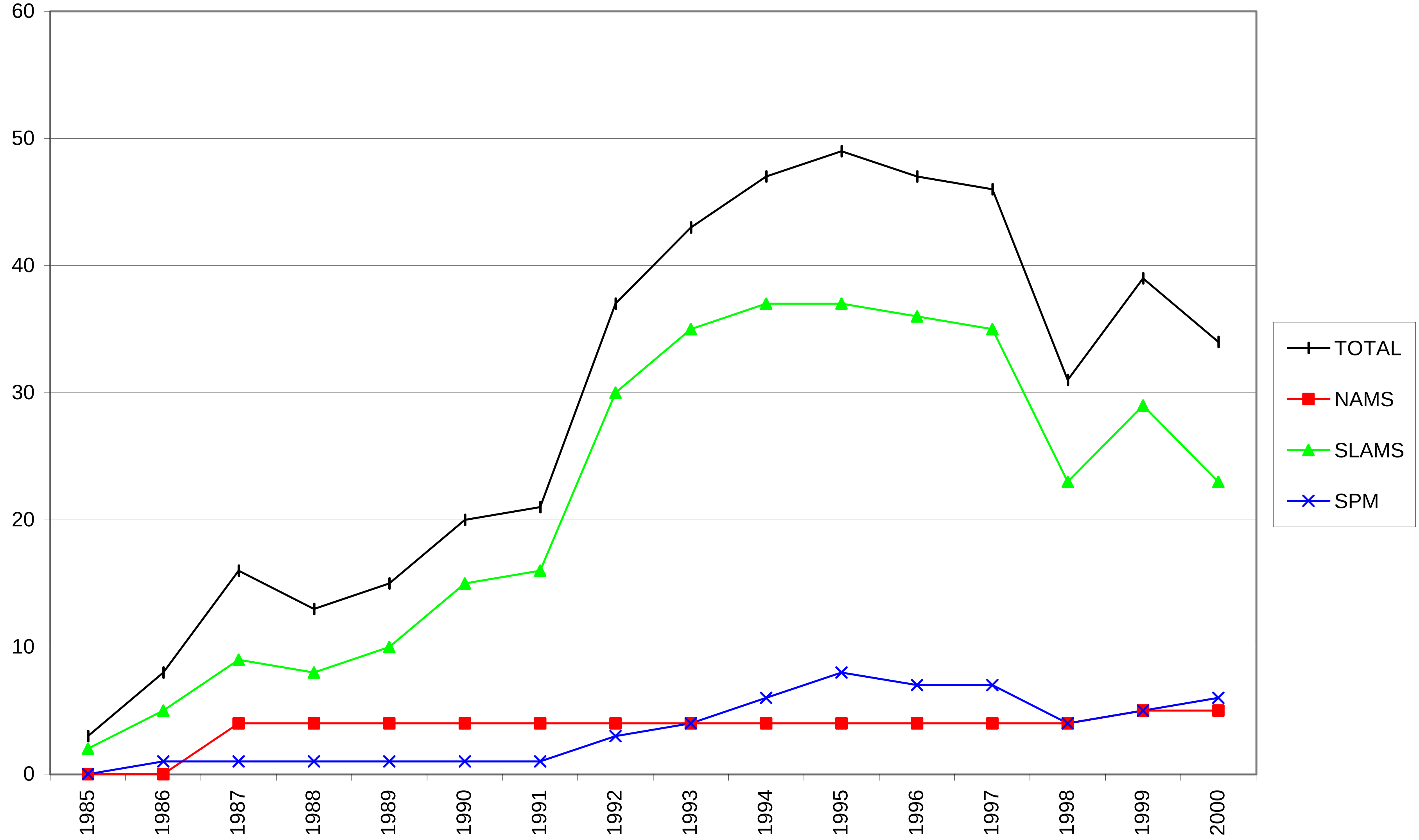
NC Active NO_2



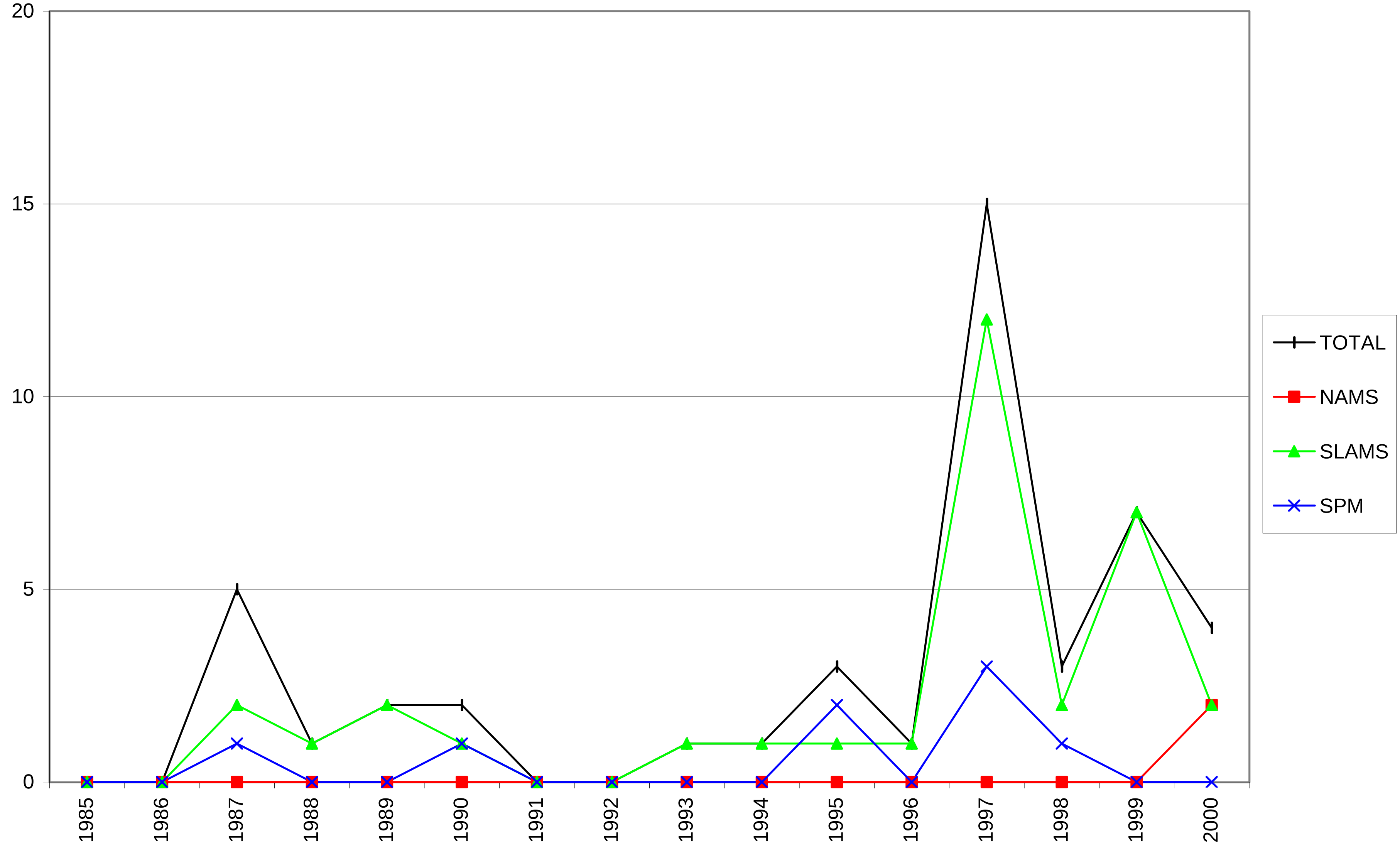
NC Terminated NO_2

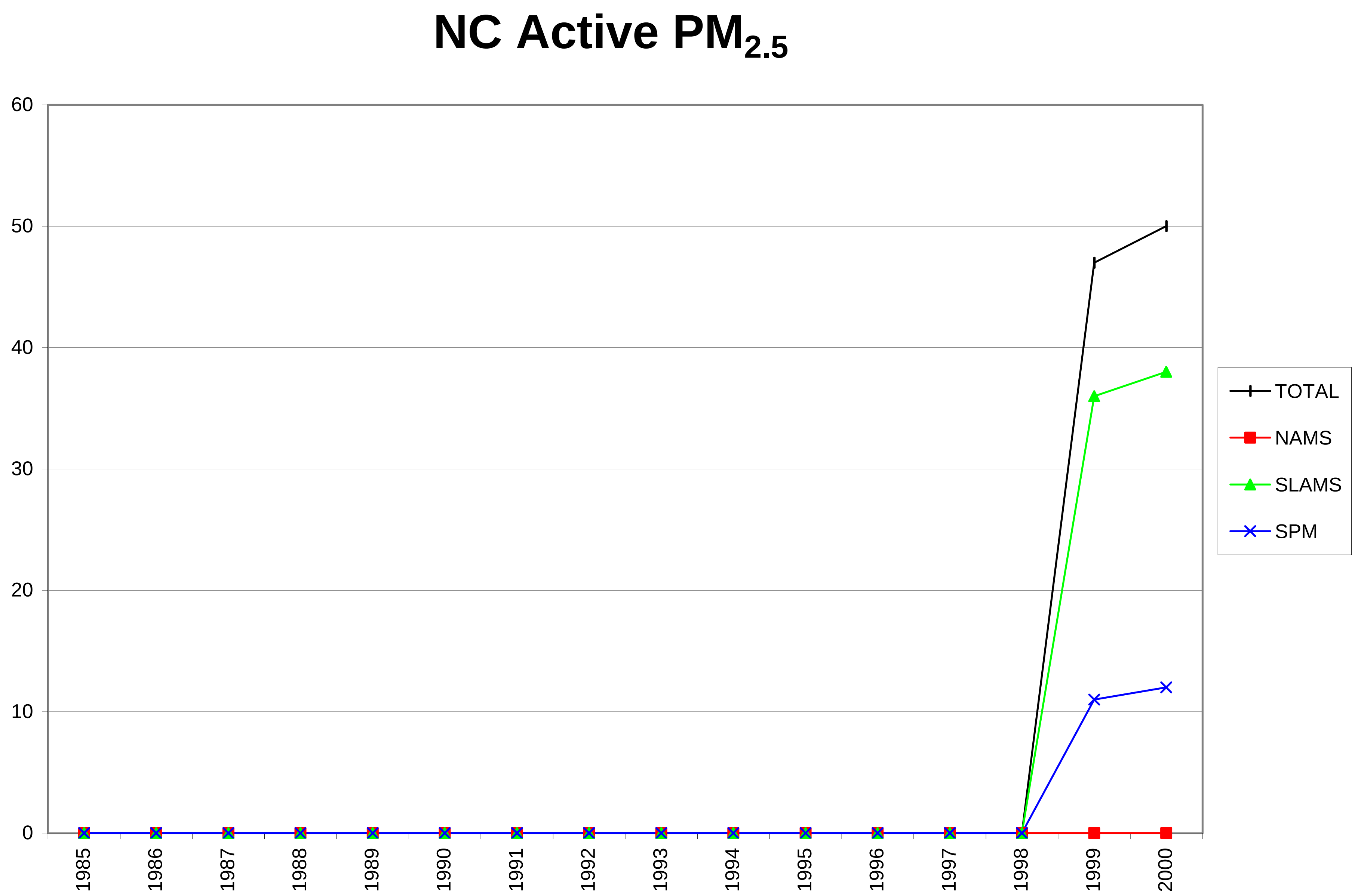


NC Active PM_{10}

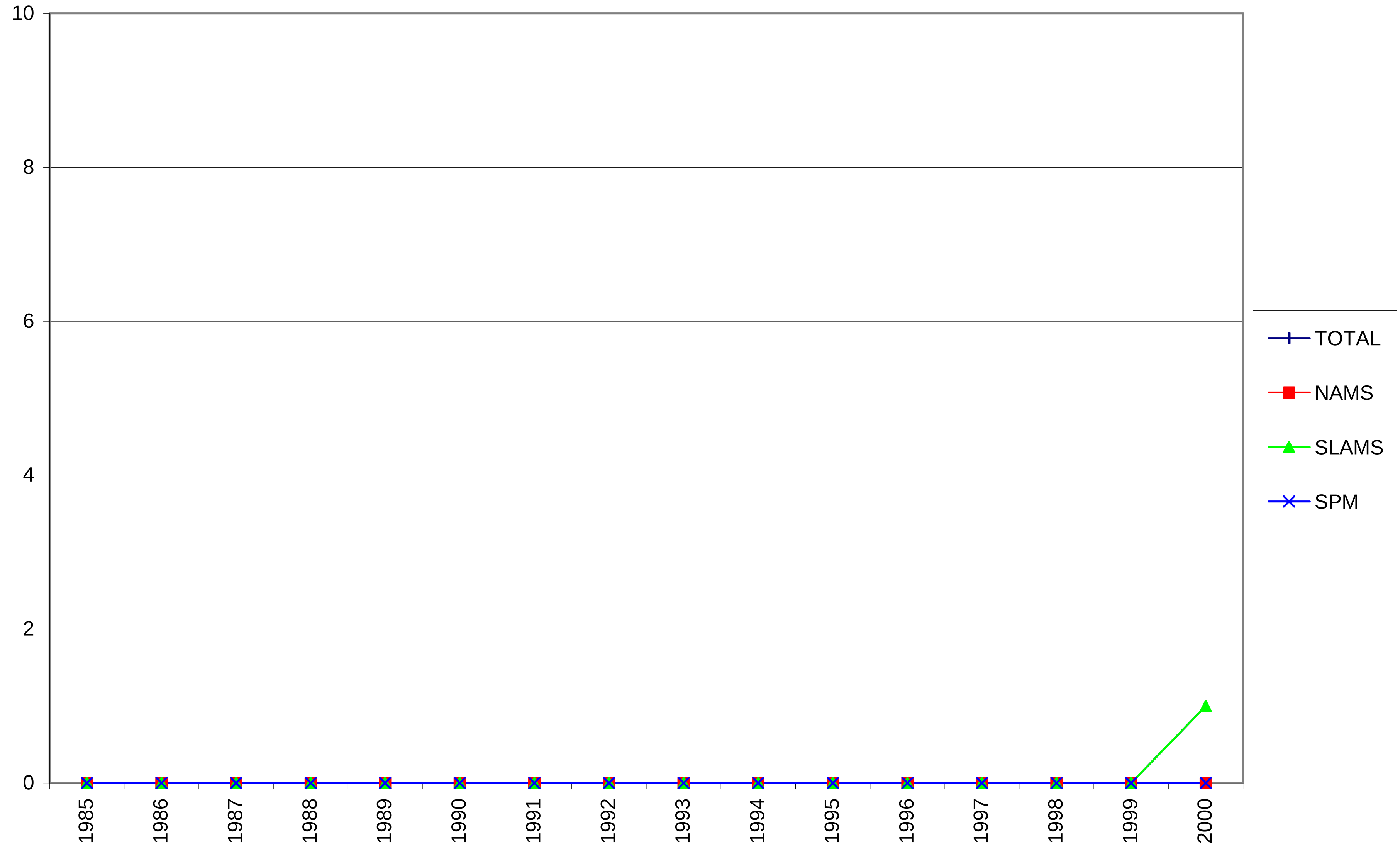


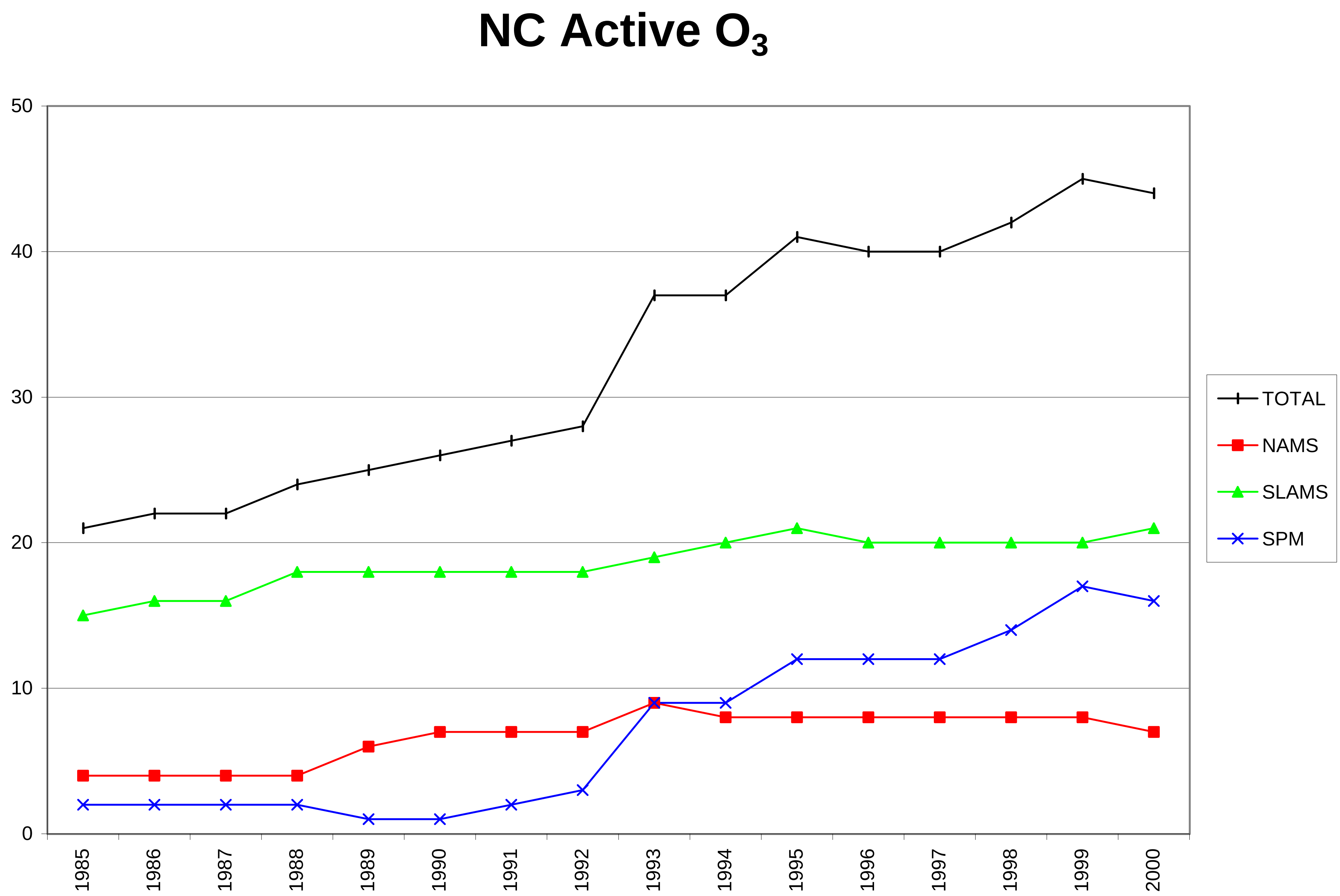
NC Terminated PM_{10}



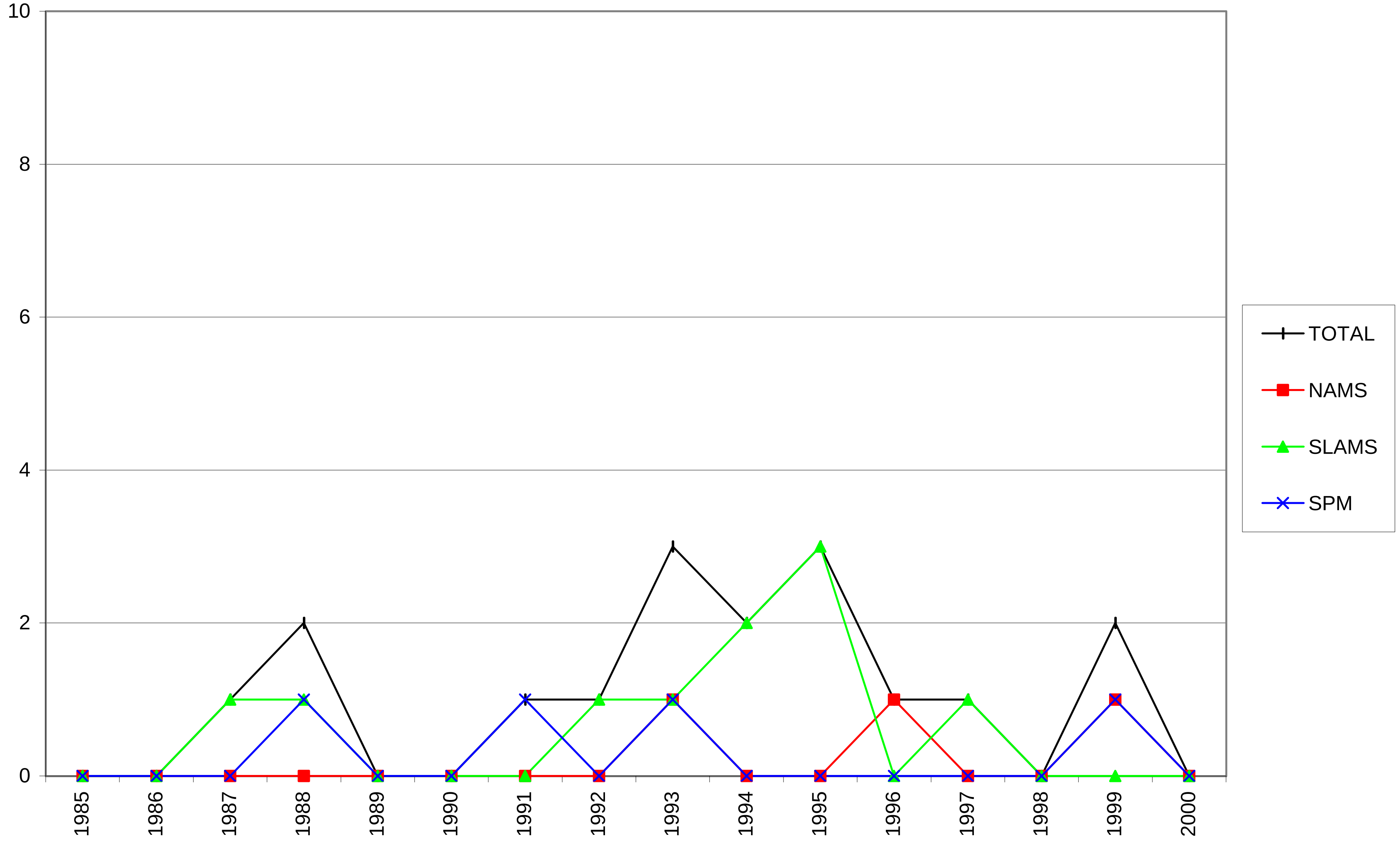

NC Active $PM_{2.5}$
60
50
40
30
20
10
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

NC Terminated $PM_{2.5}$

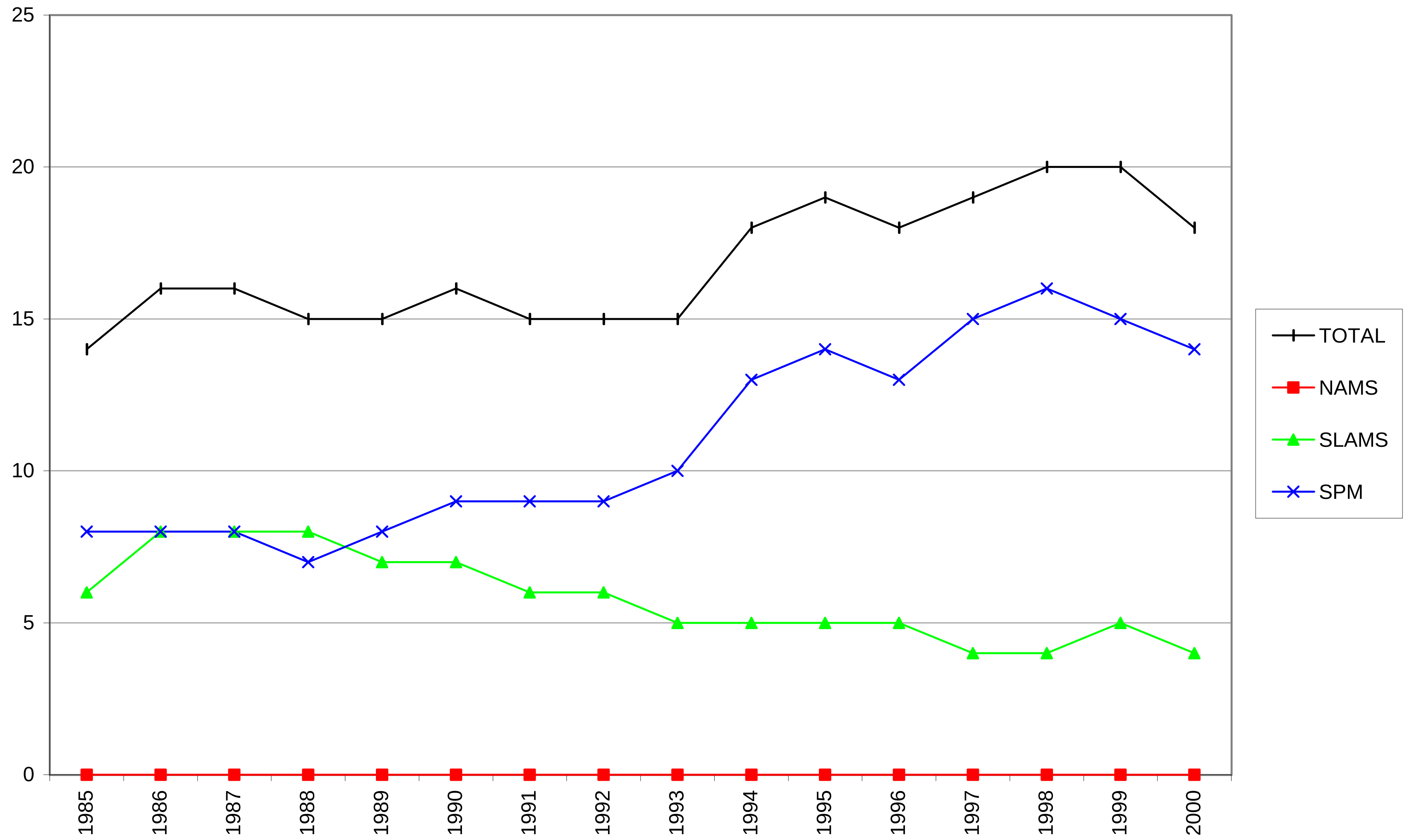



NC Active O_3
50
40
30
20
10
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

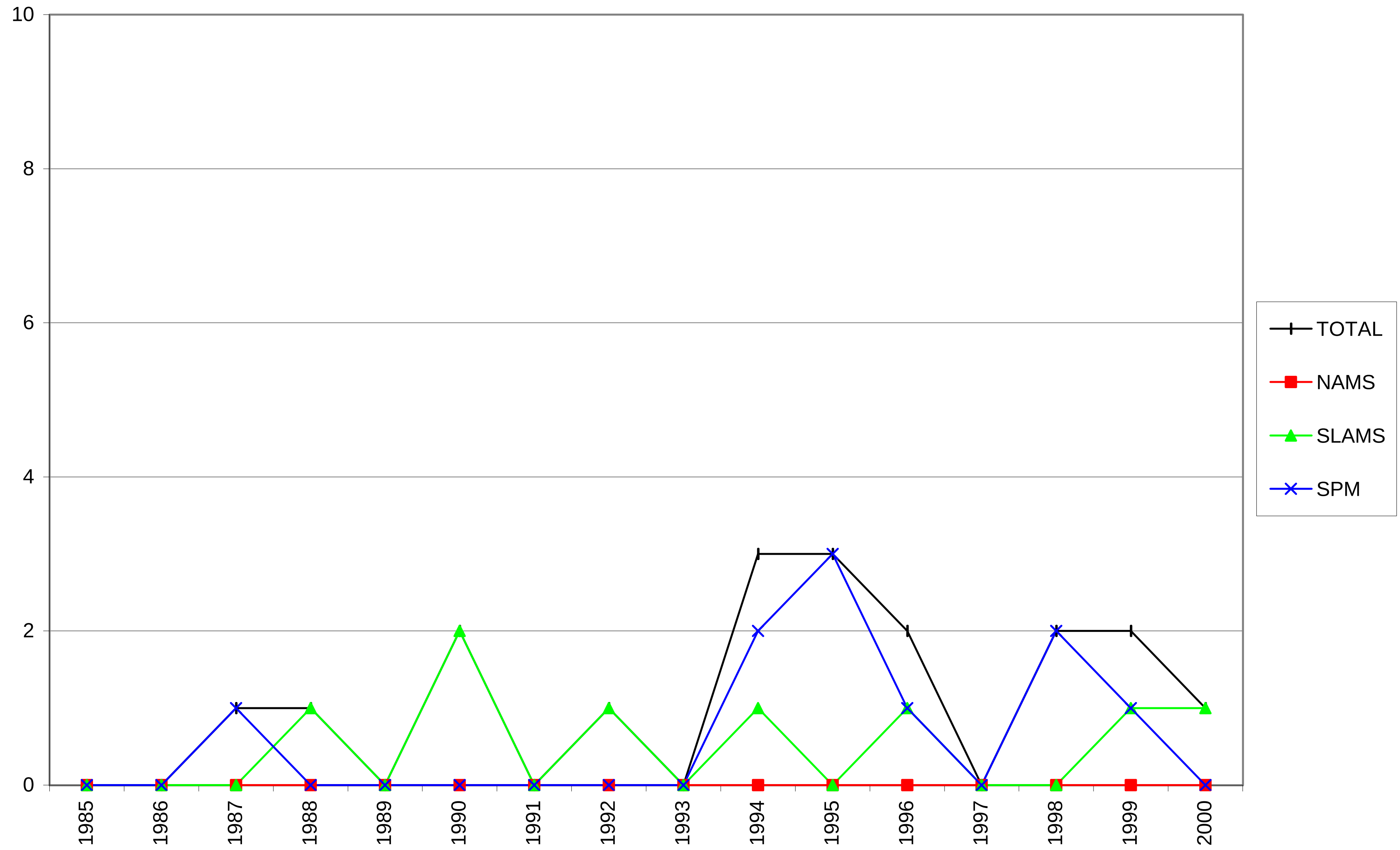
NC Terminated O_3



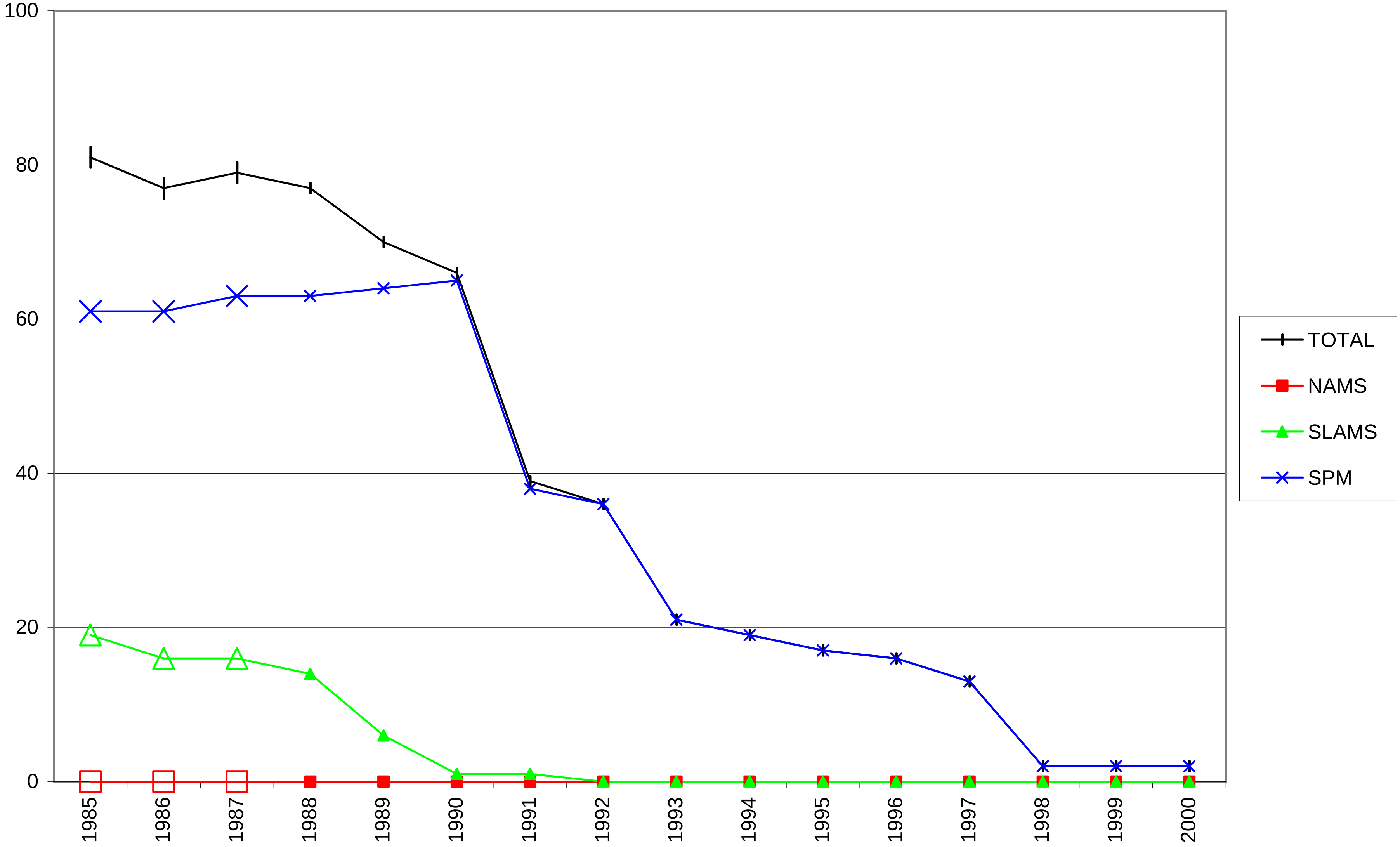
NC Active SO_2



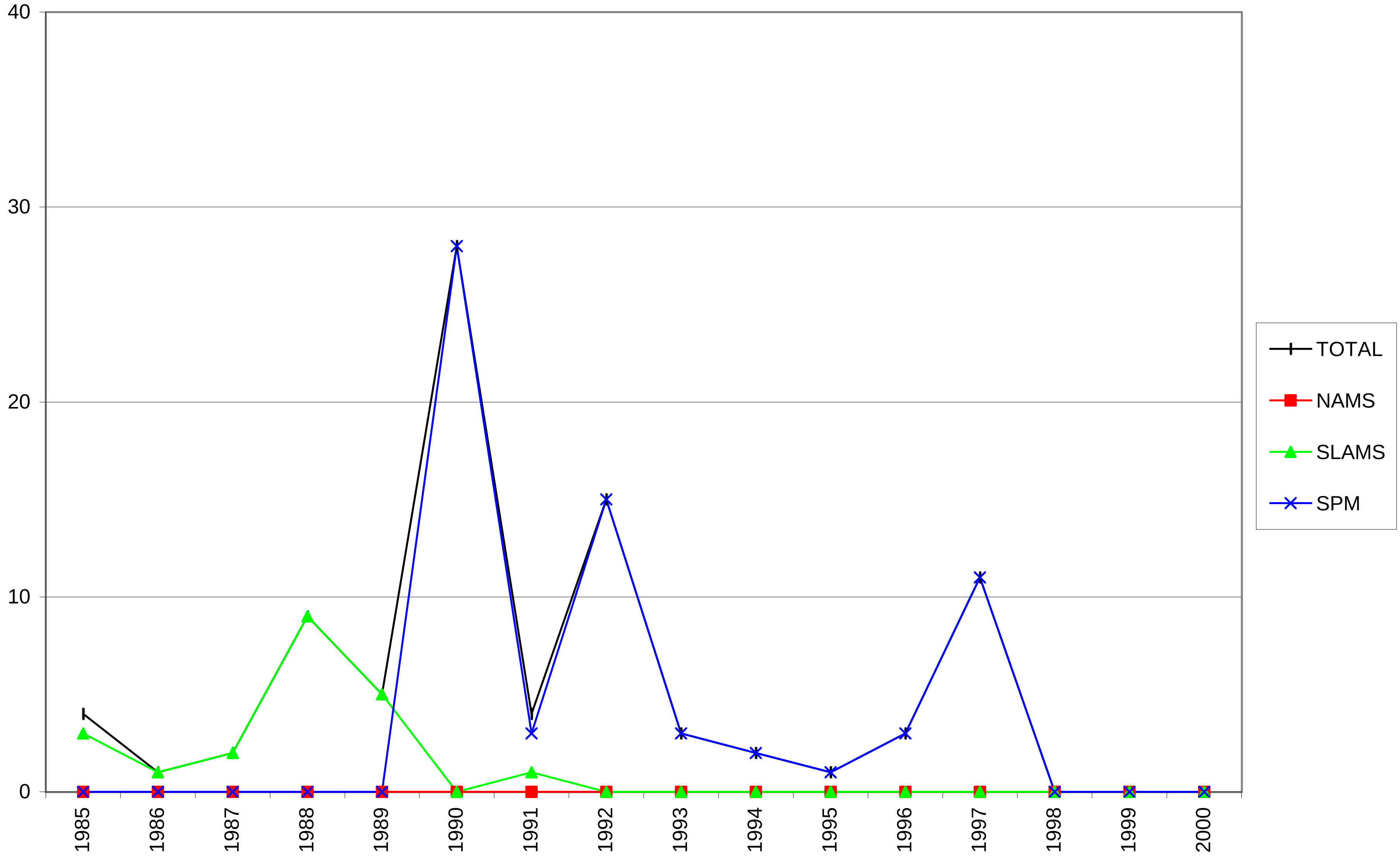
NC Terminated SO_2

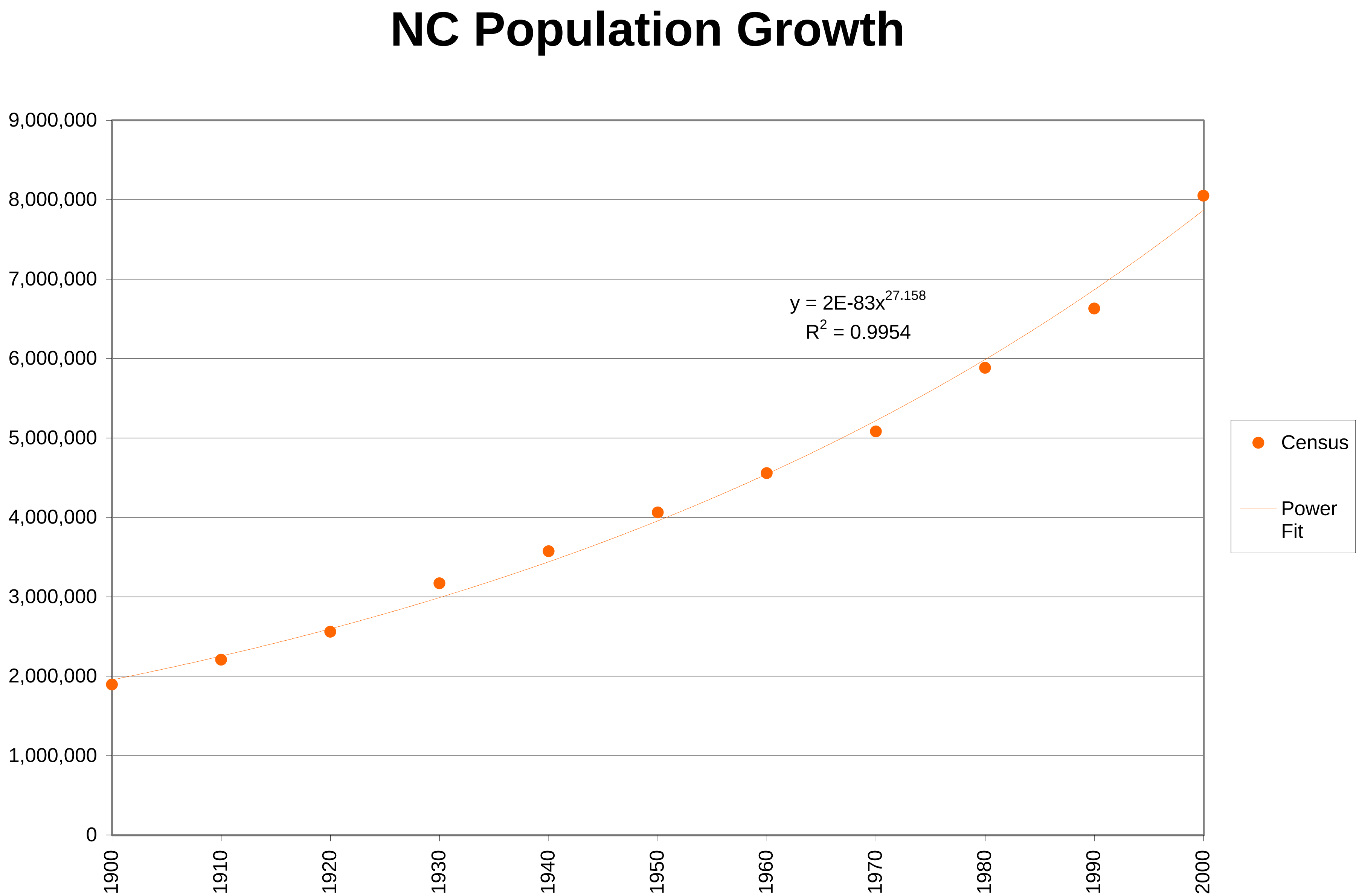


NC Active TSP

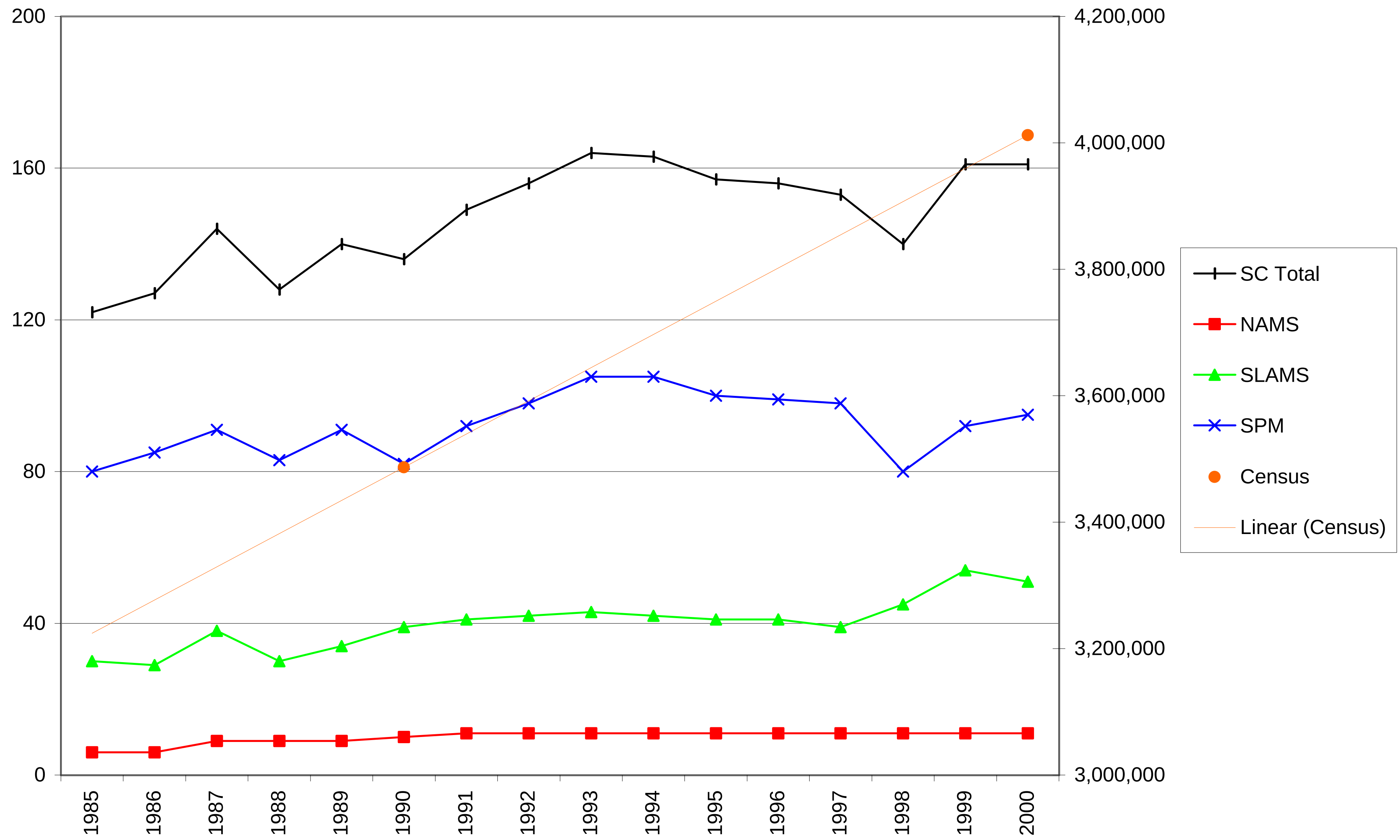


NC Terminated TSP

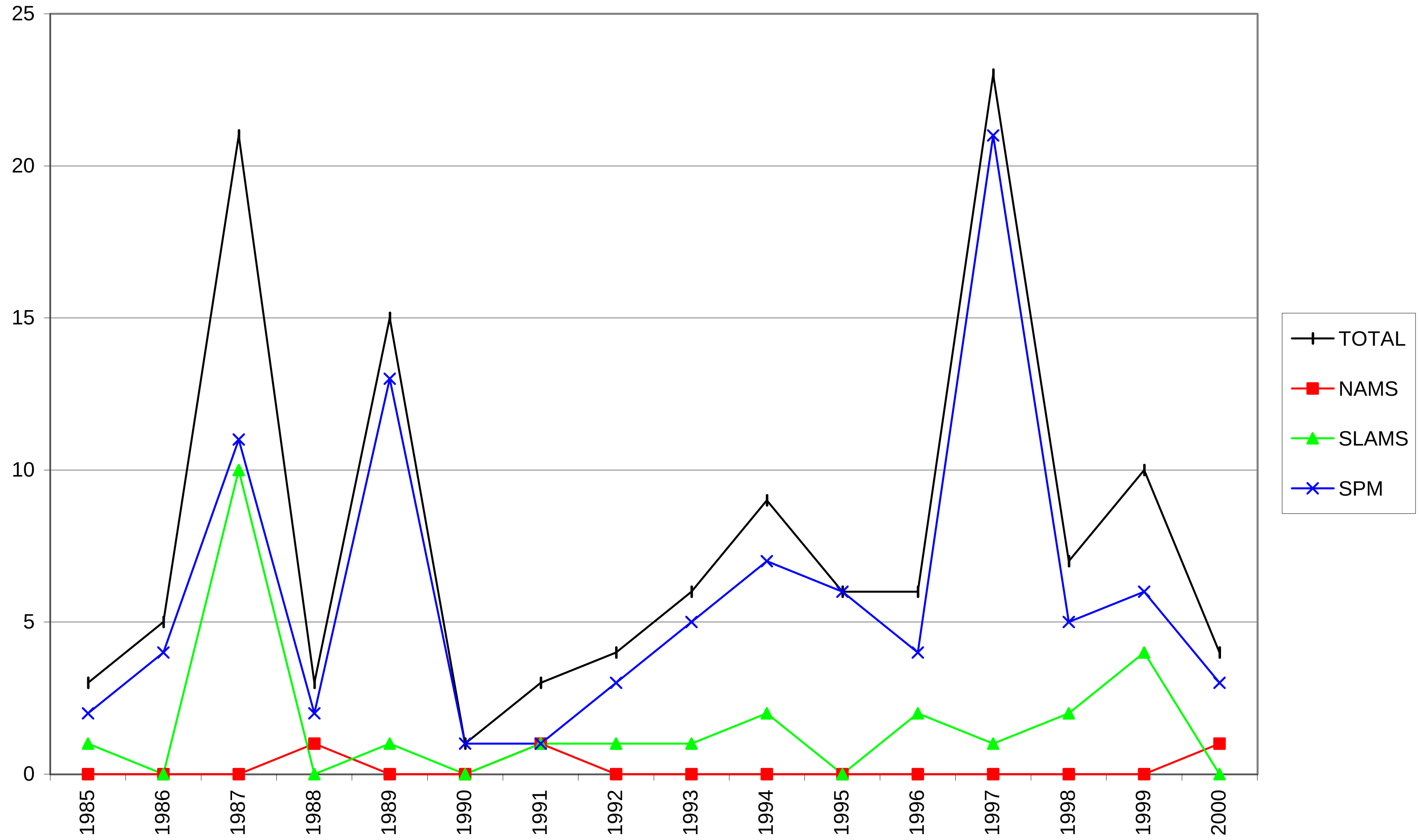



NC Population Growth
9,000,000
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
y = 2E-83x^27.158
R^2 = 0.9954
Census
Power Fit

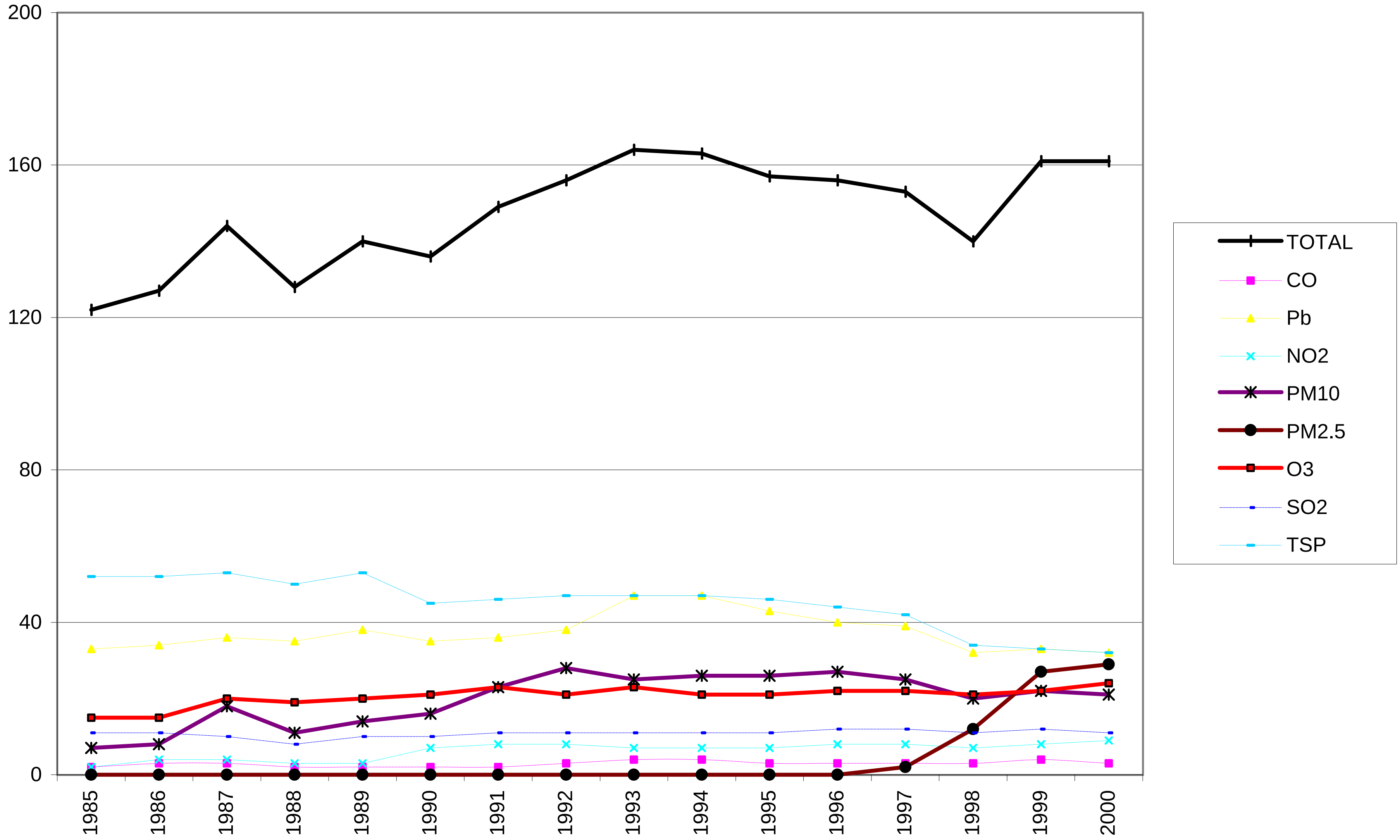
South Carolina Active Criteria

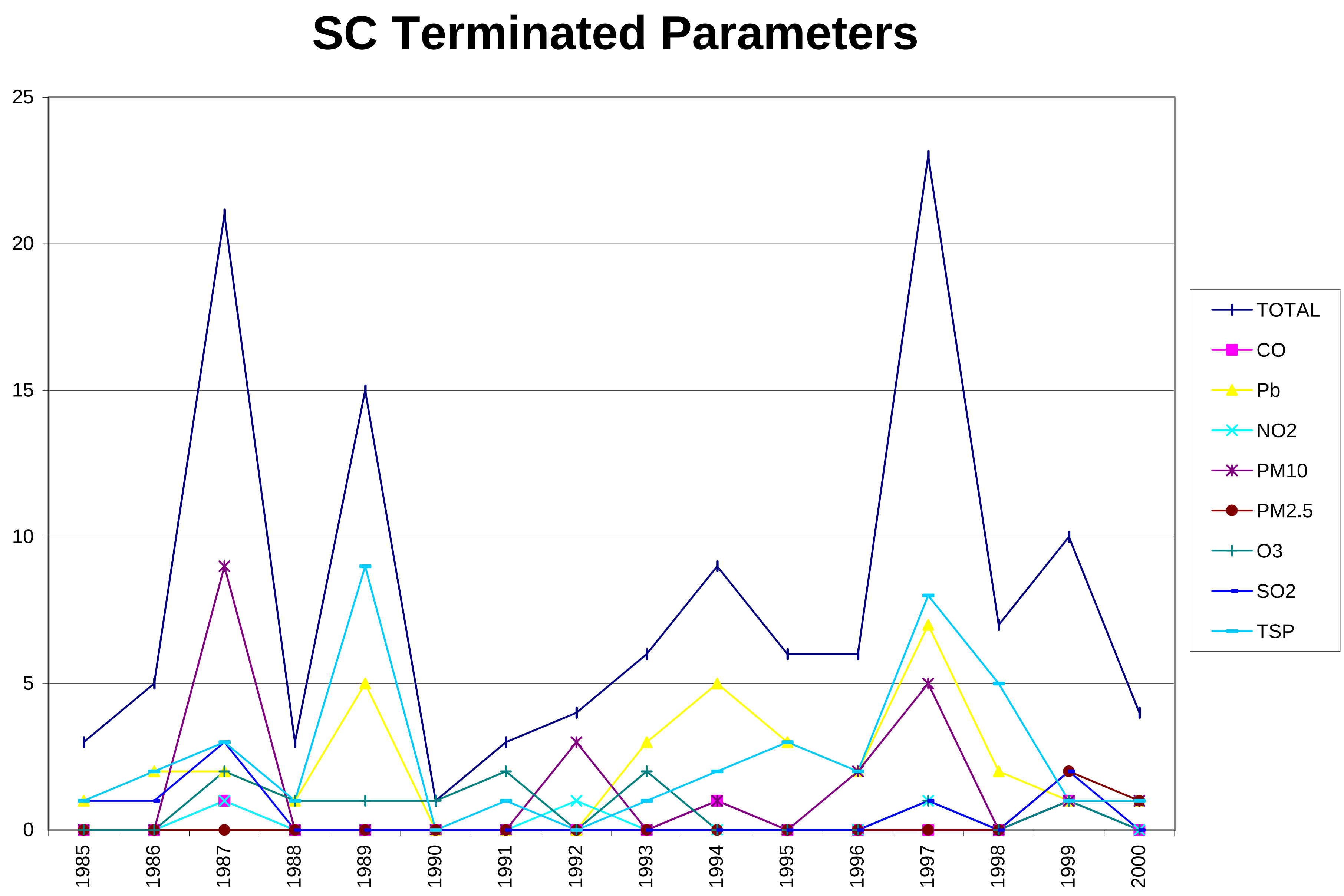


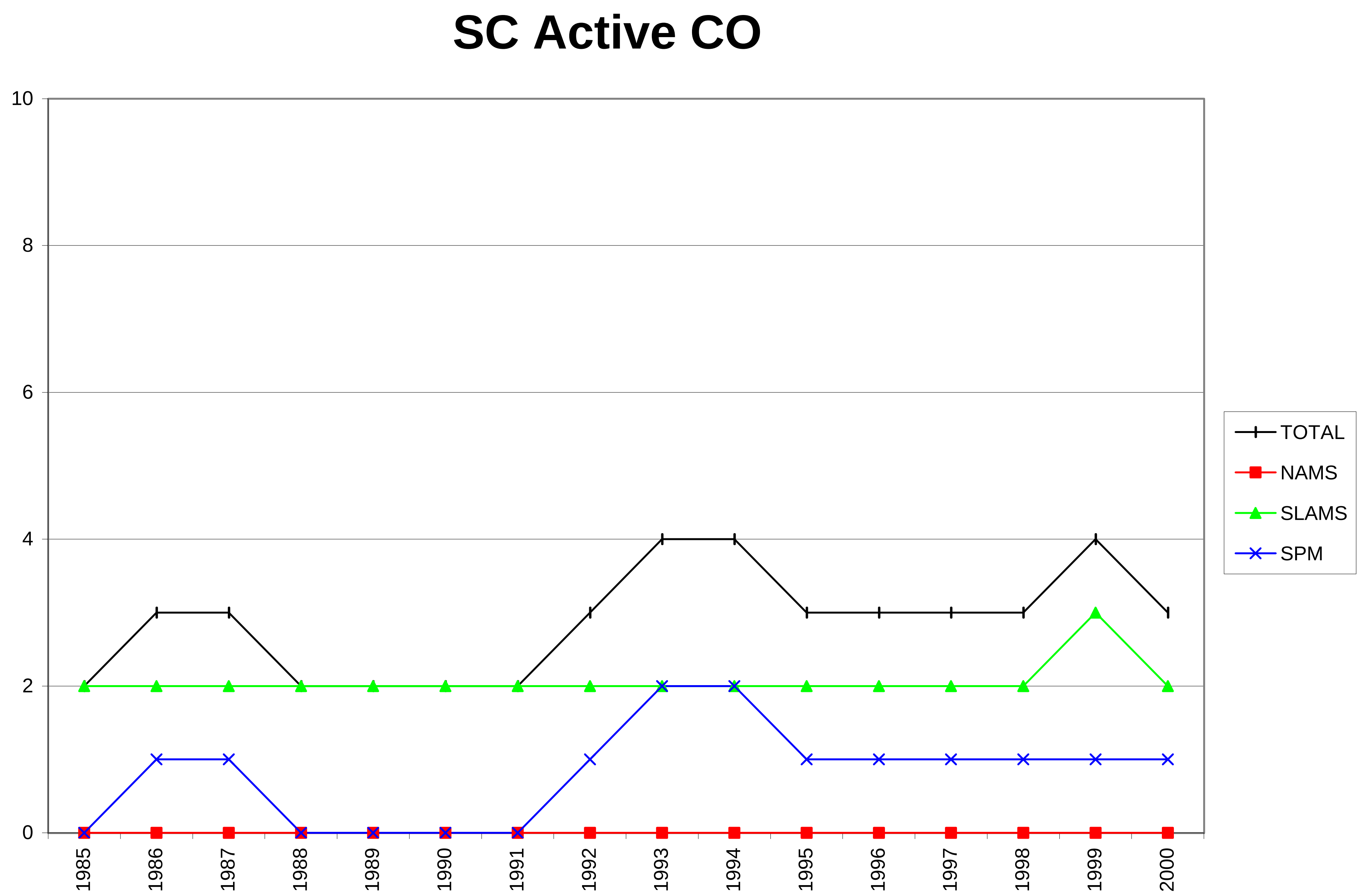
SC Terminated Parameters

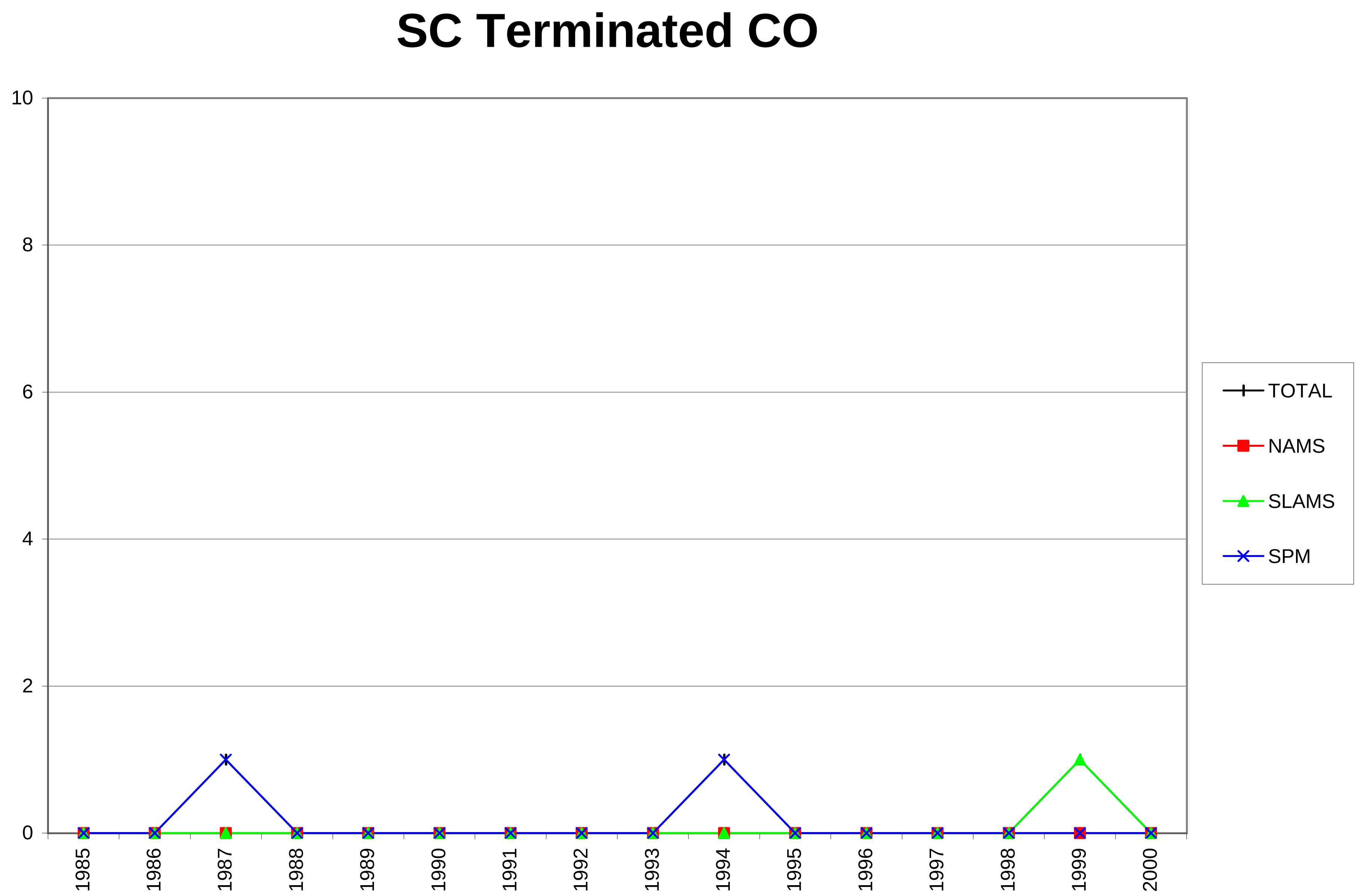


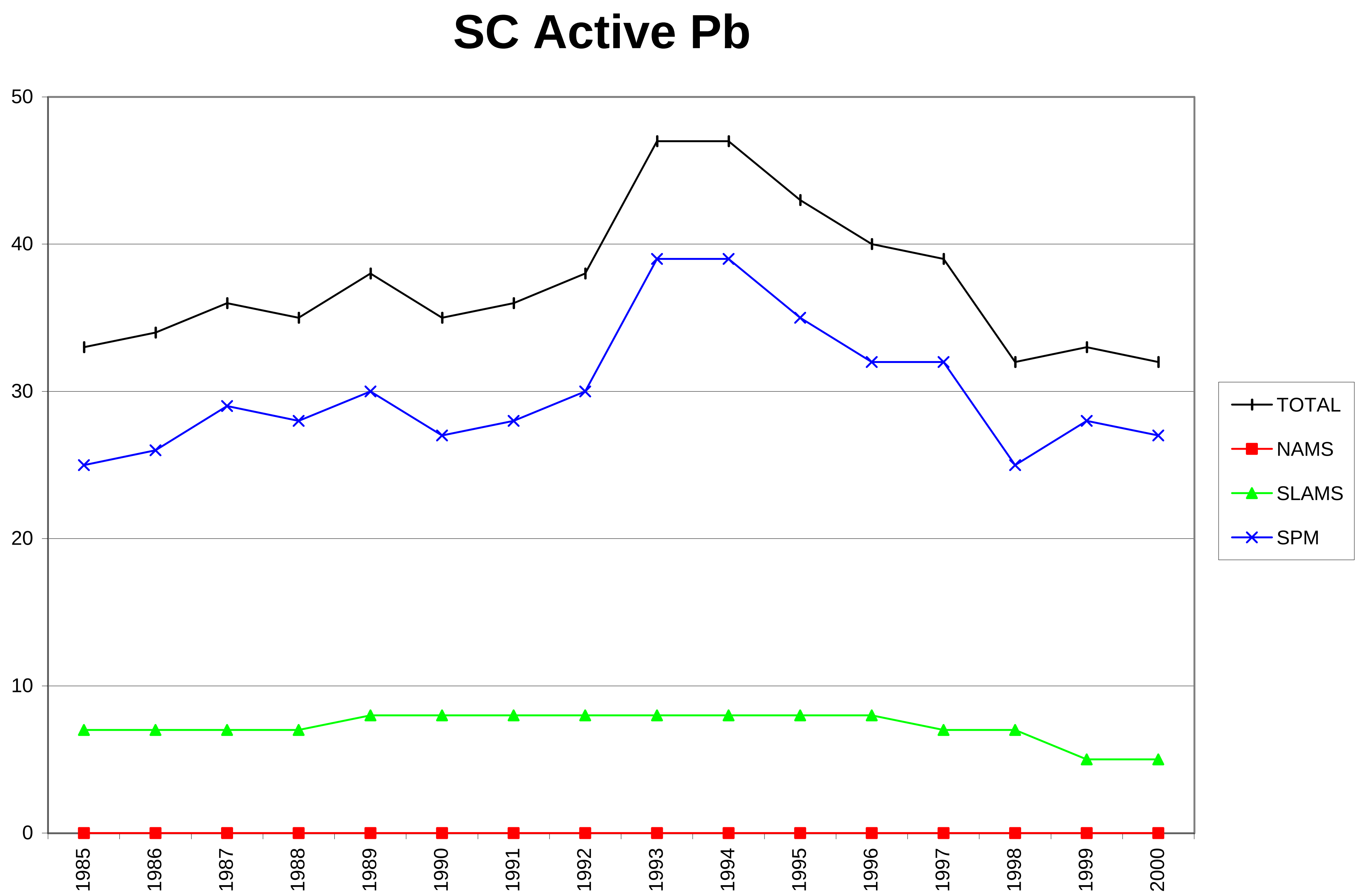
SC Active Criteria

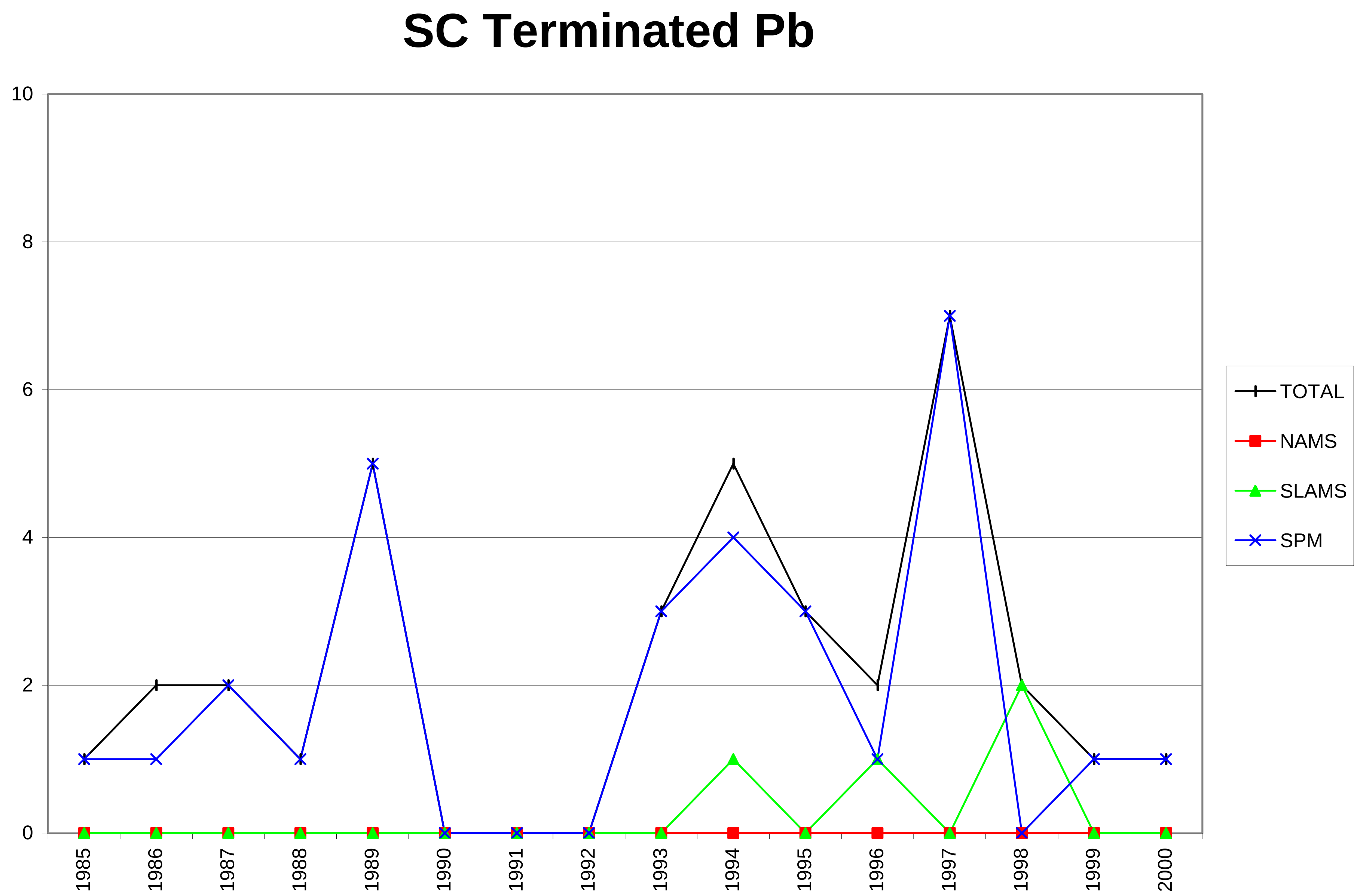



SC Terminated Parameters
0
5
10
15
20
25
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
CO
Pb
NO2
PM10
PM2.5
O3
SO2
TSP


SC Active CO
10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

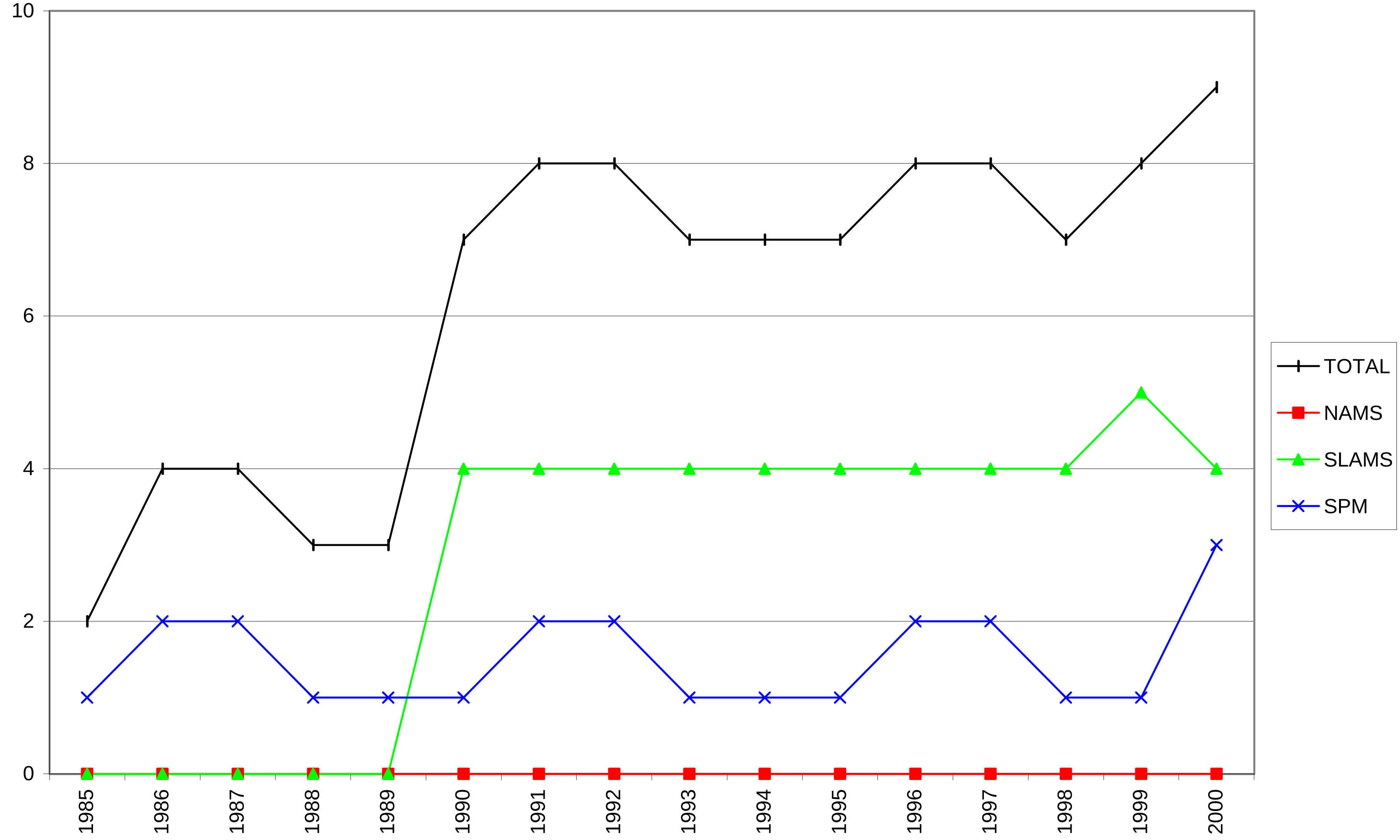

SC Terminated CO
10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM


SC Active Pb
50
40
30
20
10
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

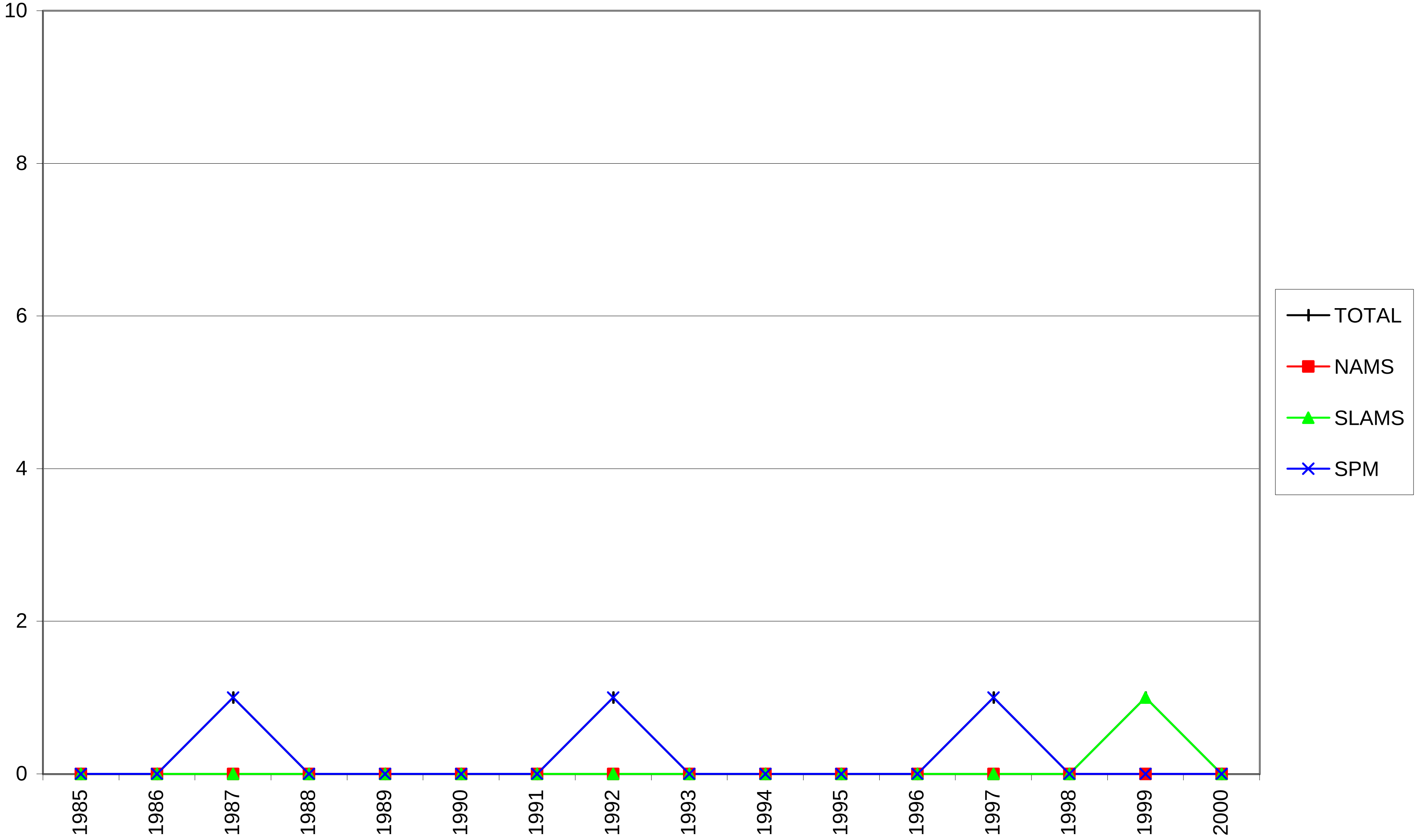


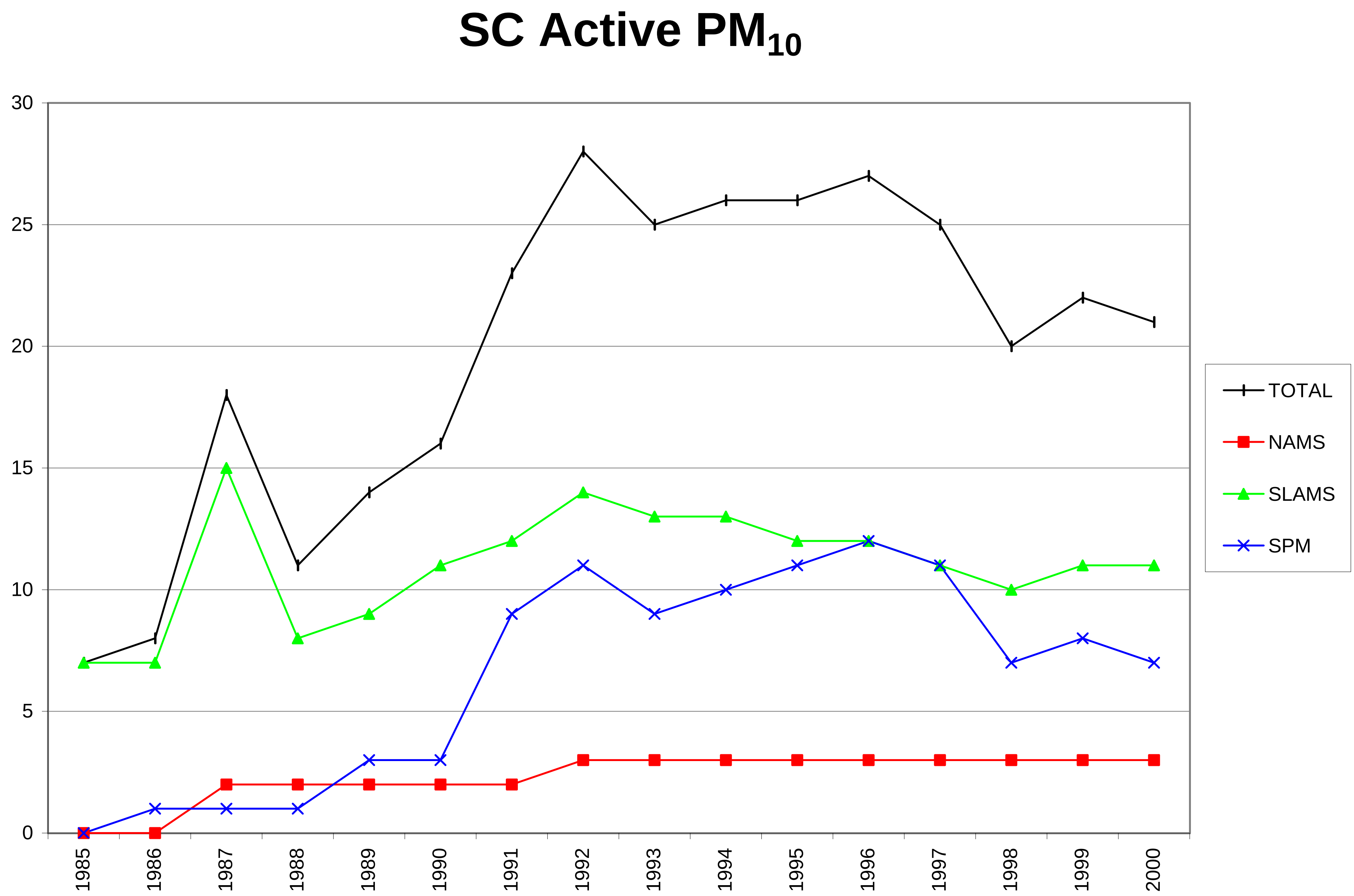
SC Terminated Pb
10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

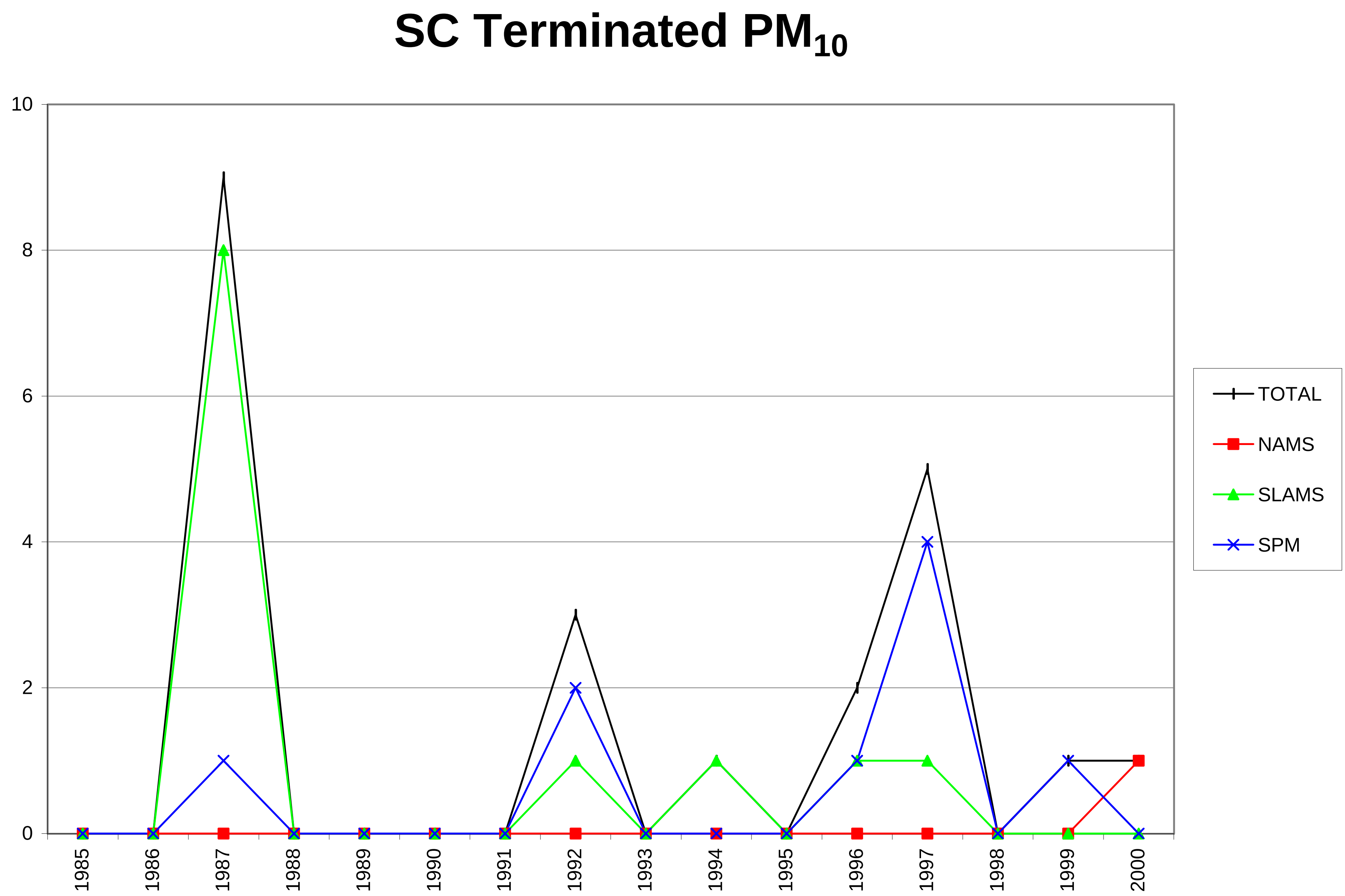
SC Active NO_2



SC Terminated NO_2

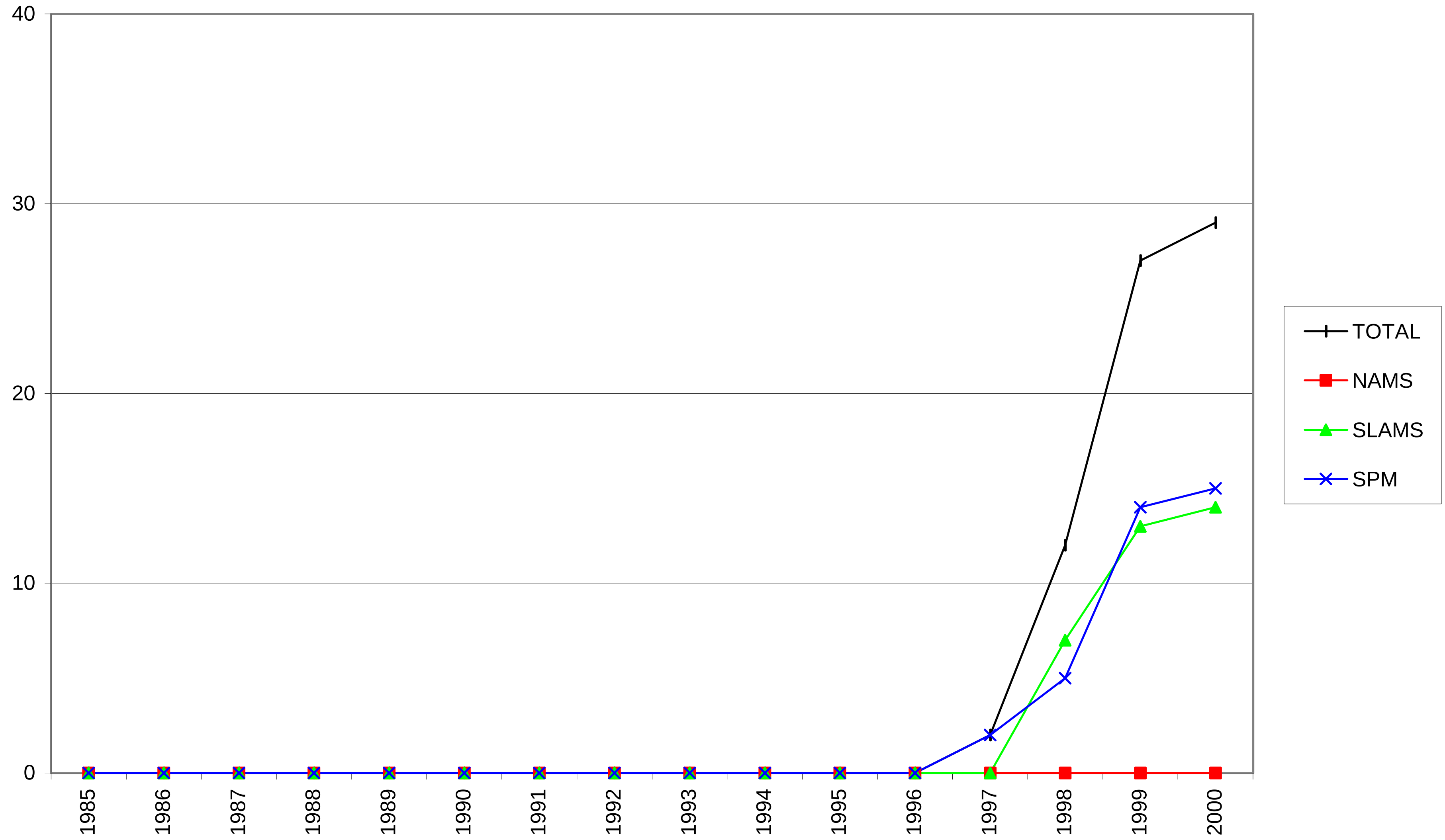


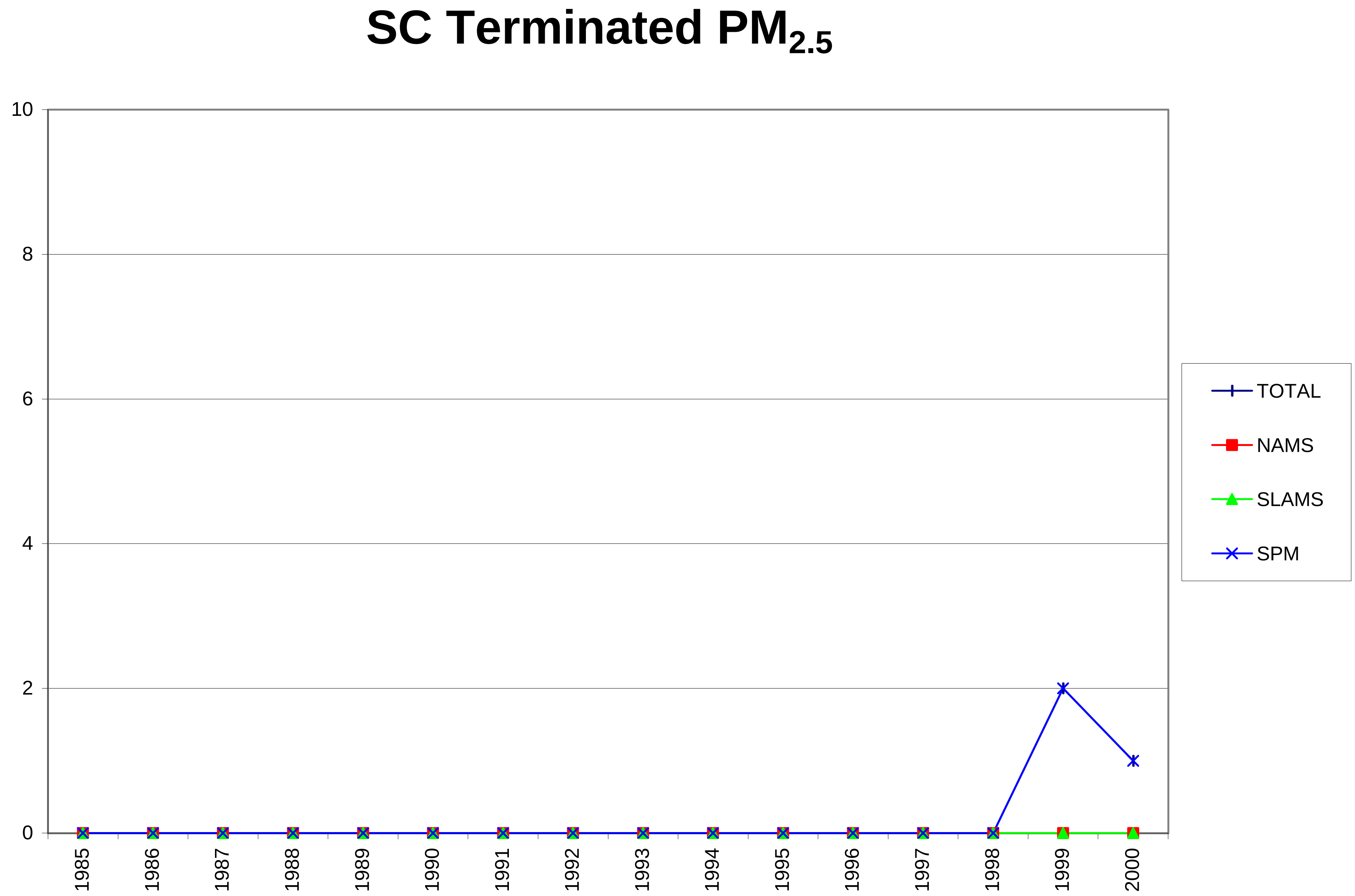

SC Active PM10
30
25
20
15
10
5
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM



SC Terminated PM_{10}
10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

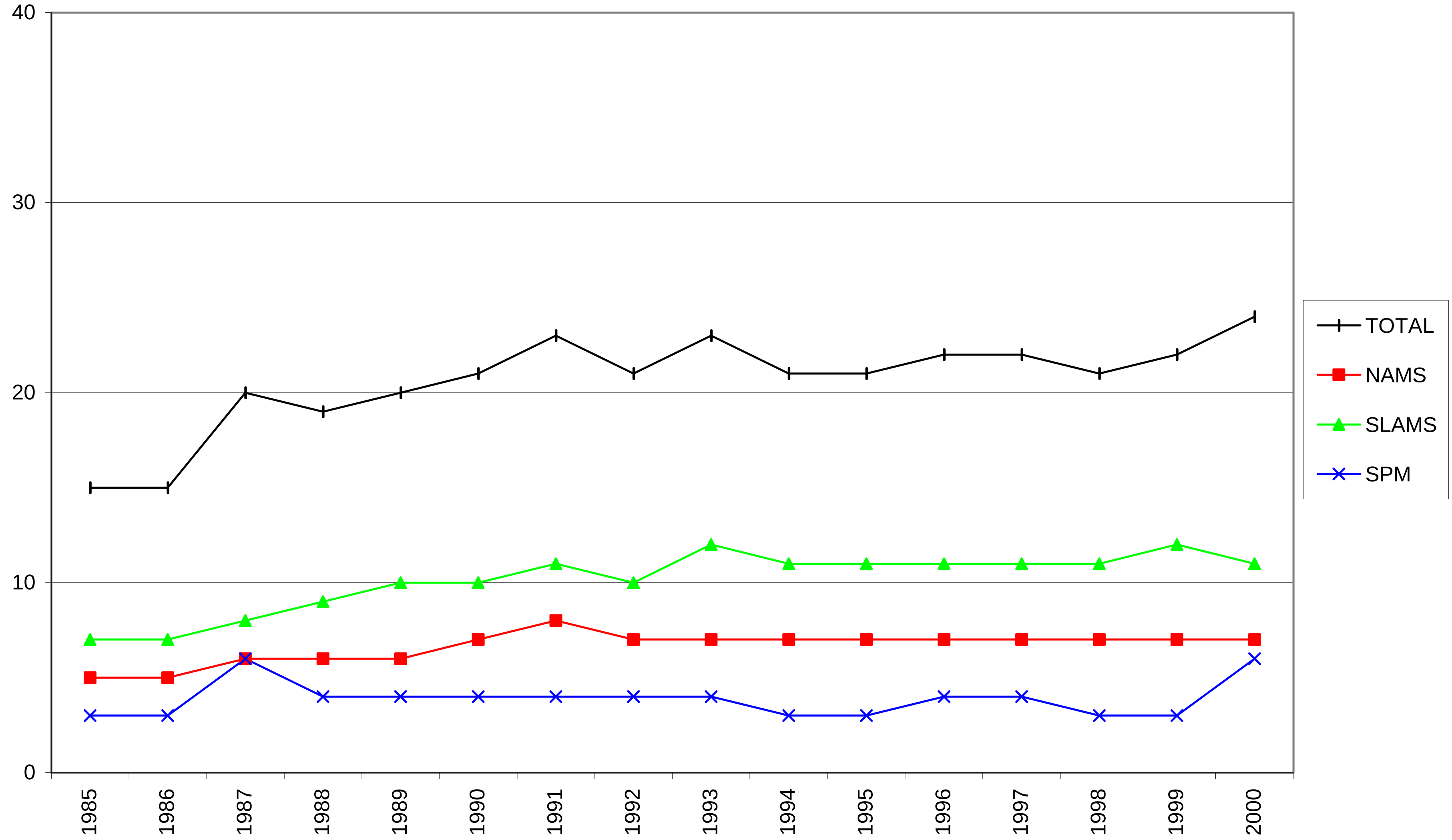
SC Active $PM_{2.5}$

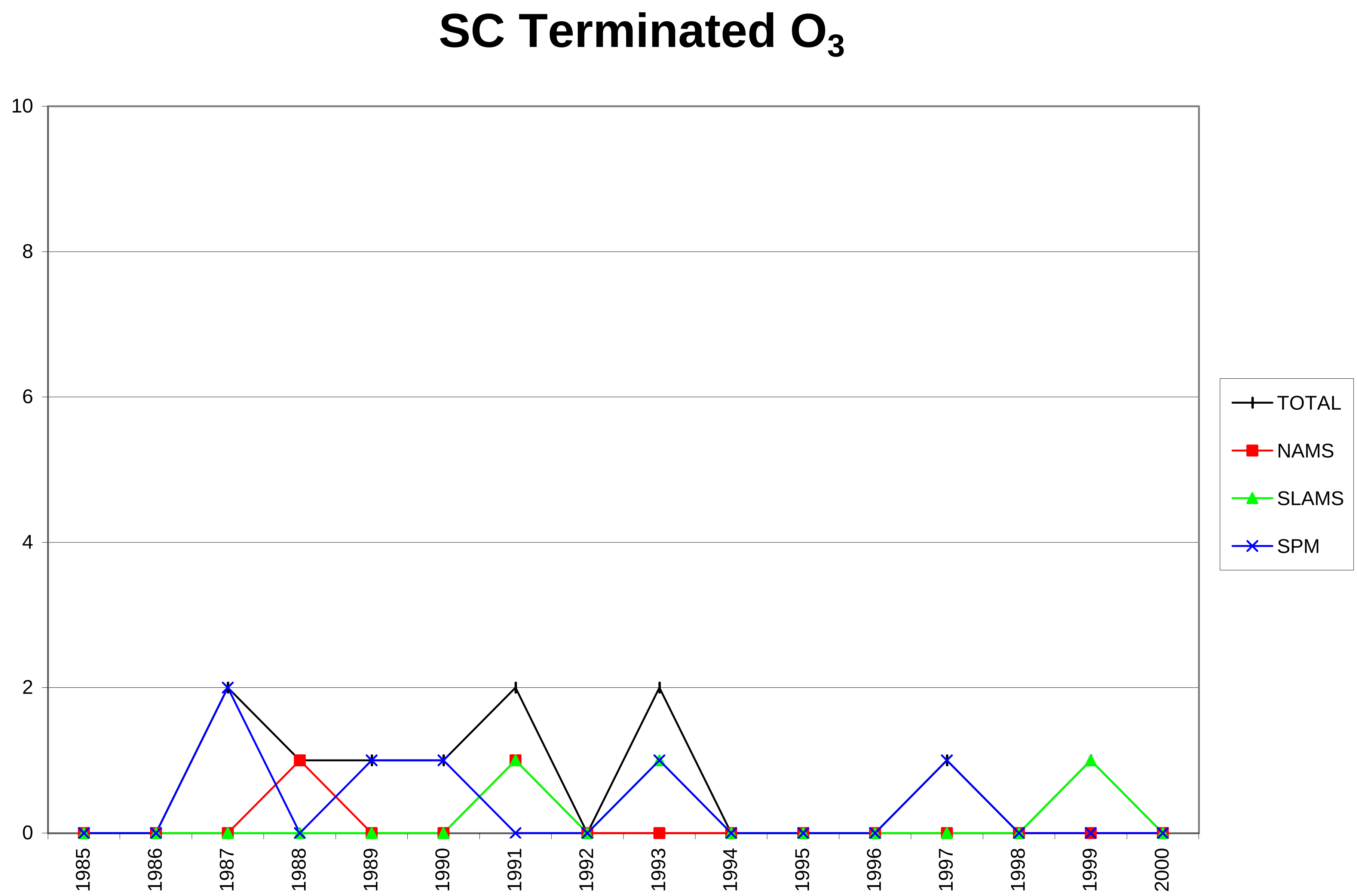


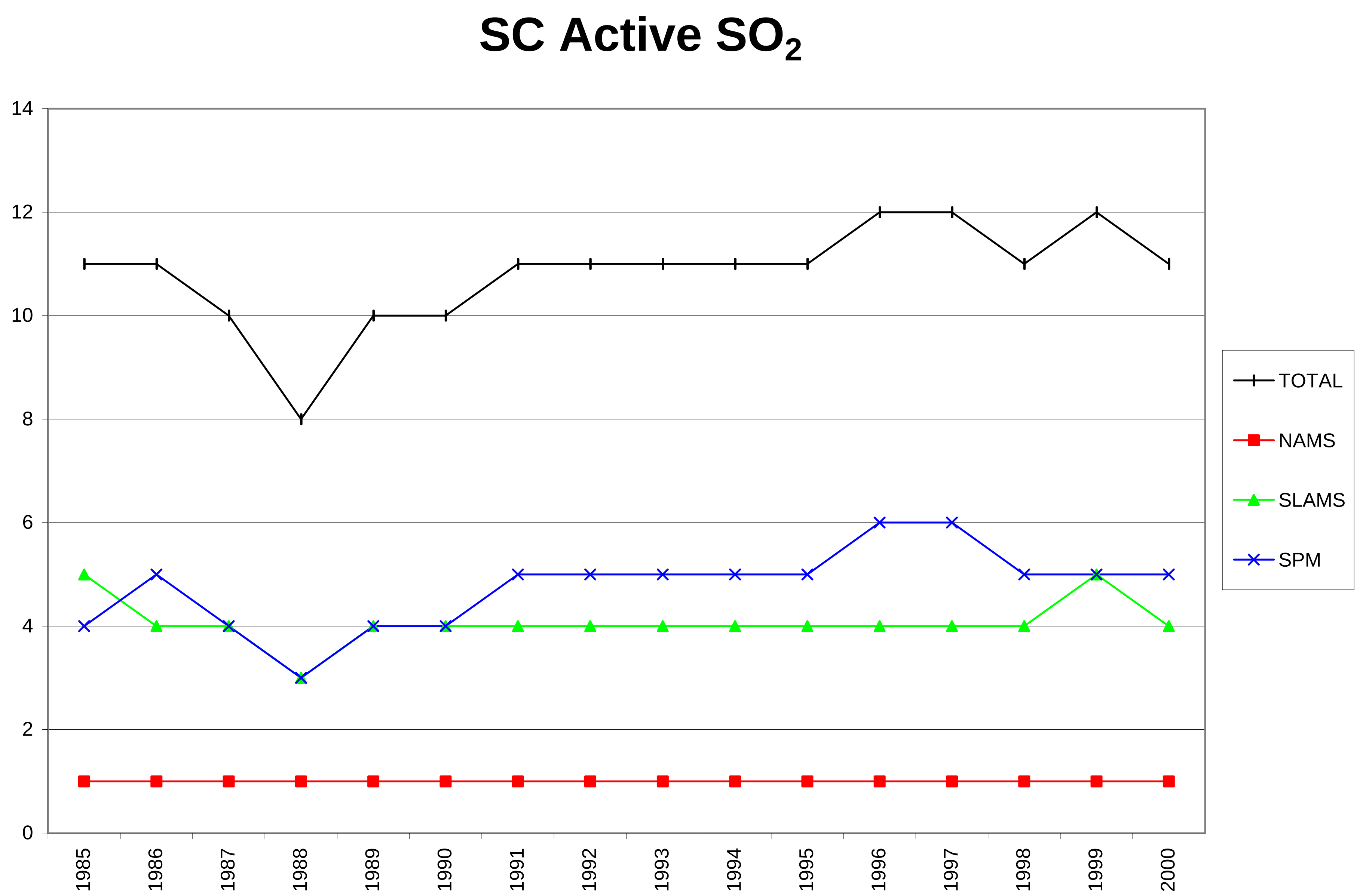


SC Terminated PM2.5
10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

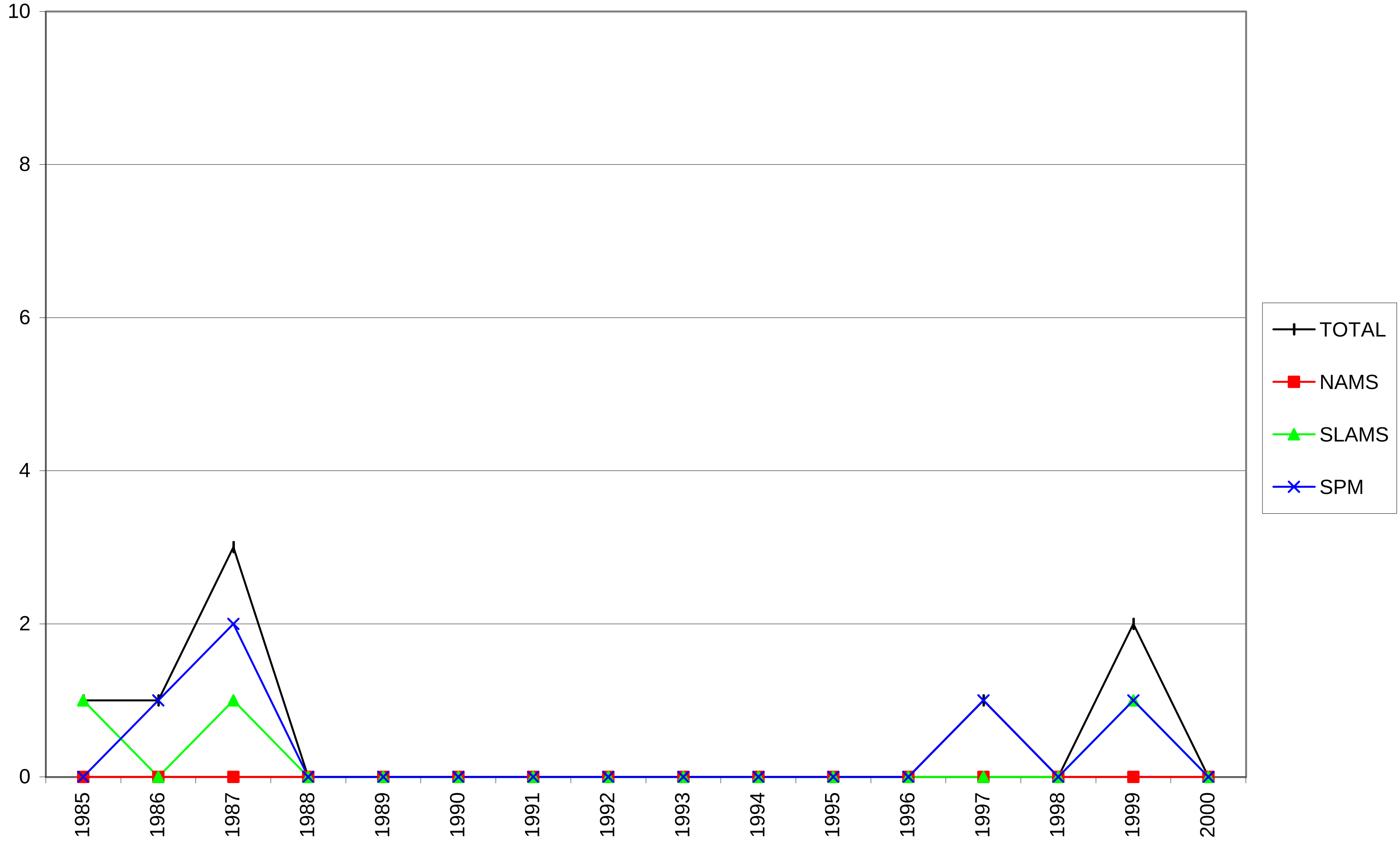
SC Active O_3


40
30
20
10
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

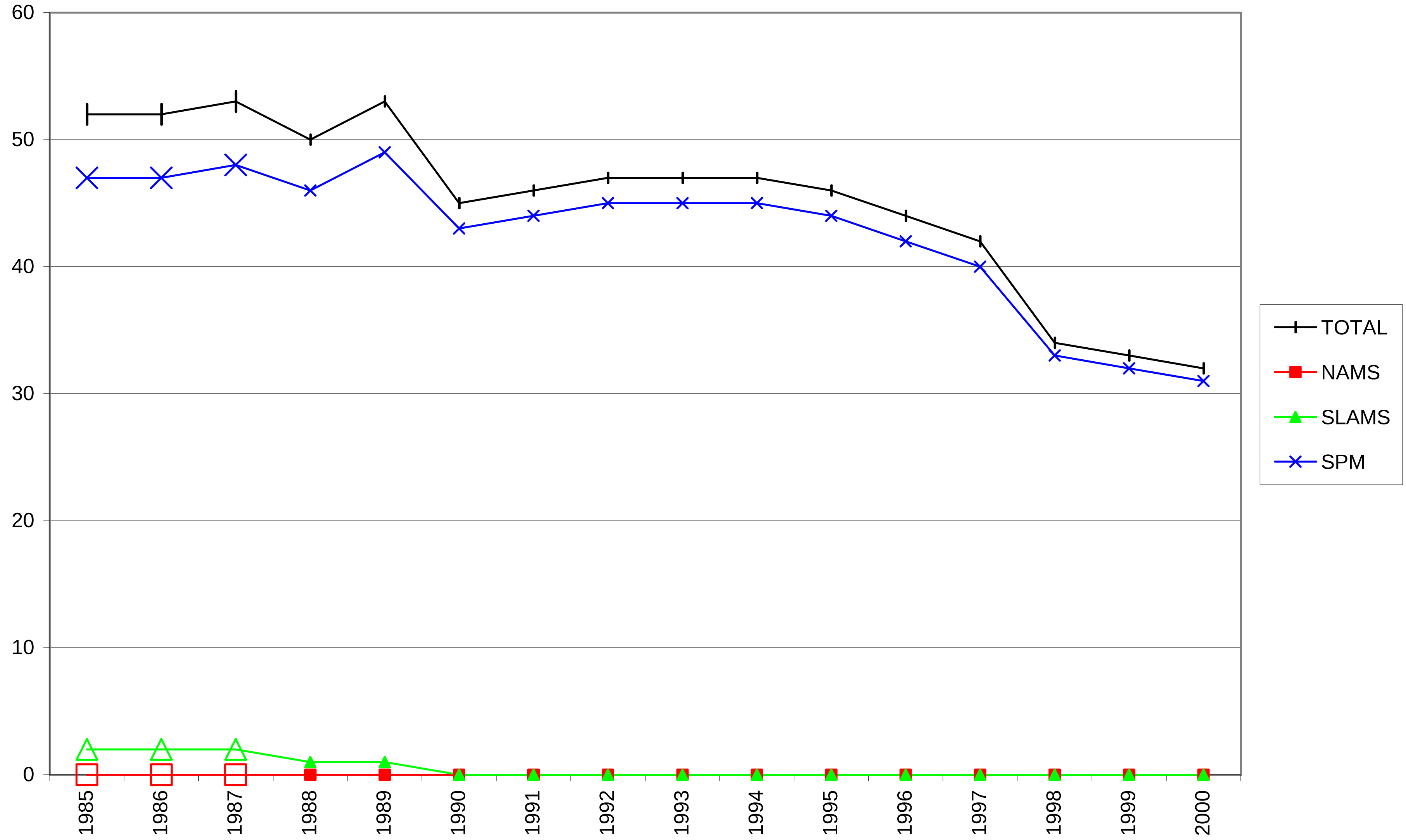

SC Terminated O_3
10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM


SC Active SO_2
14
12
10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

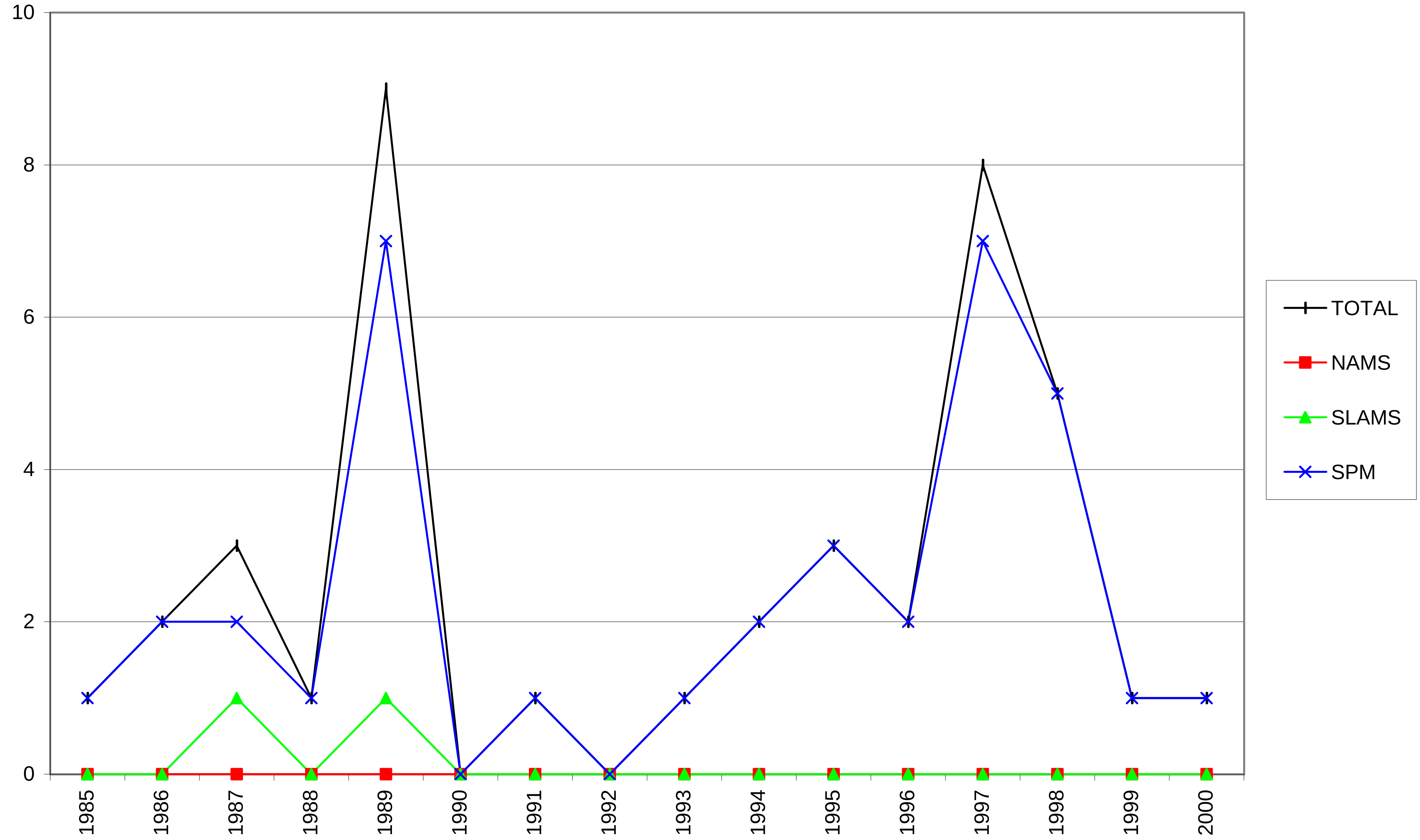
SC Terminated SO_2

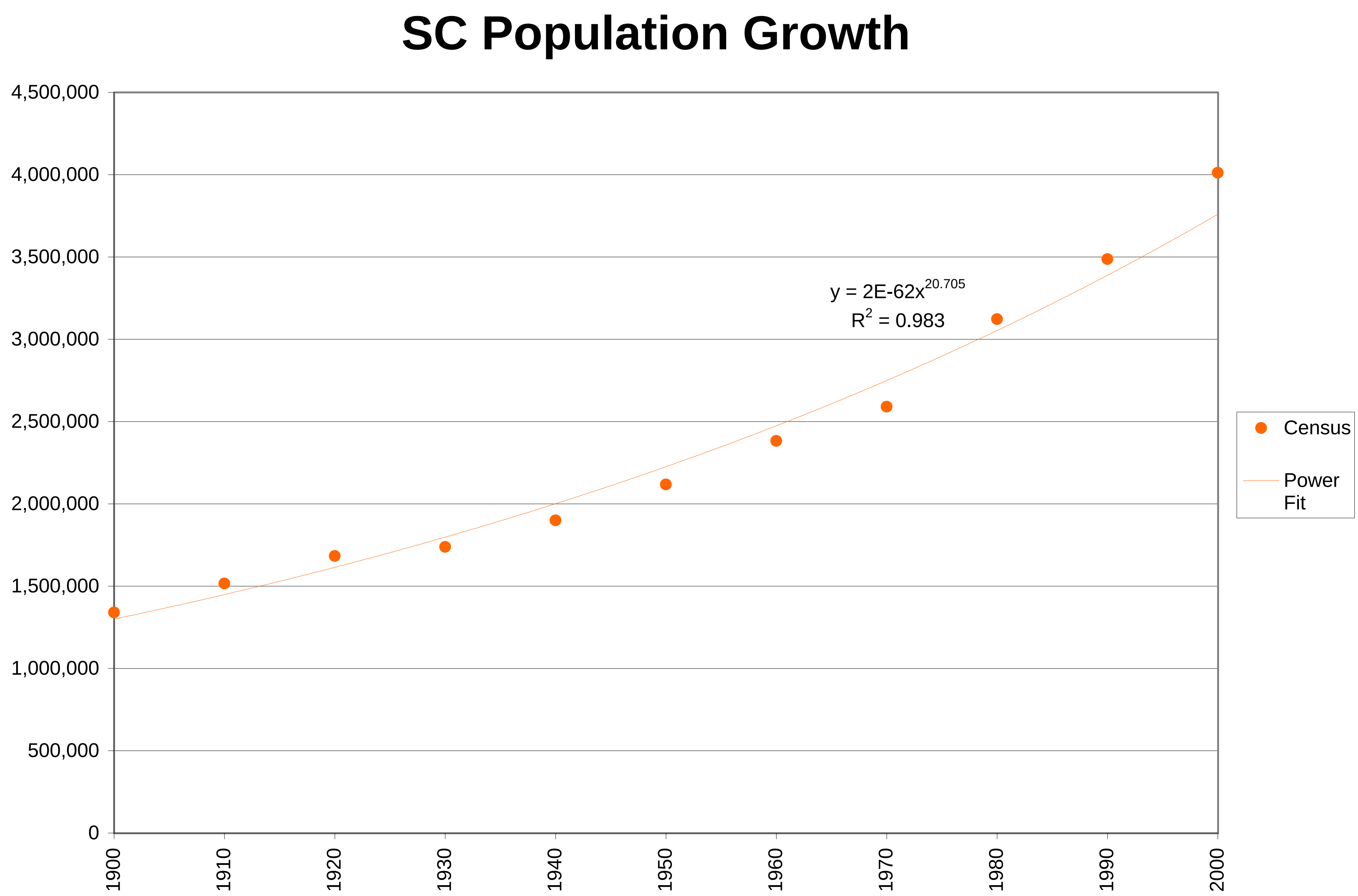


SC ActiveTSP



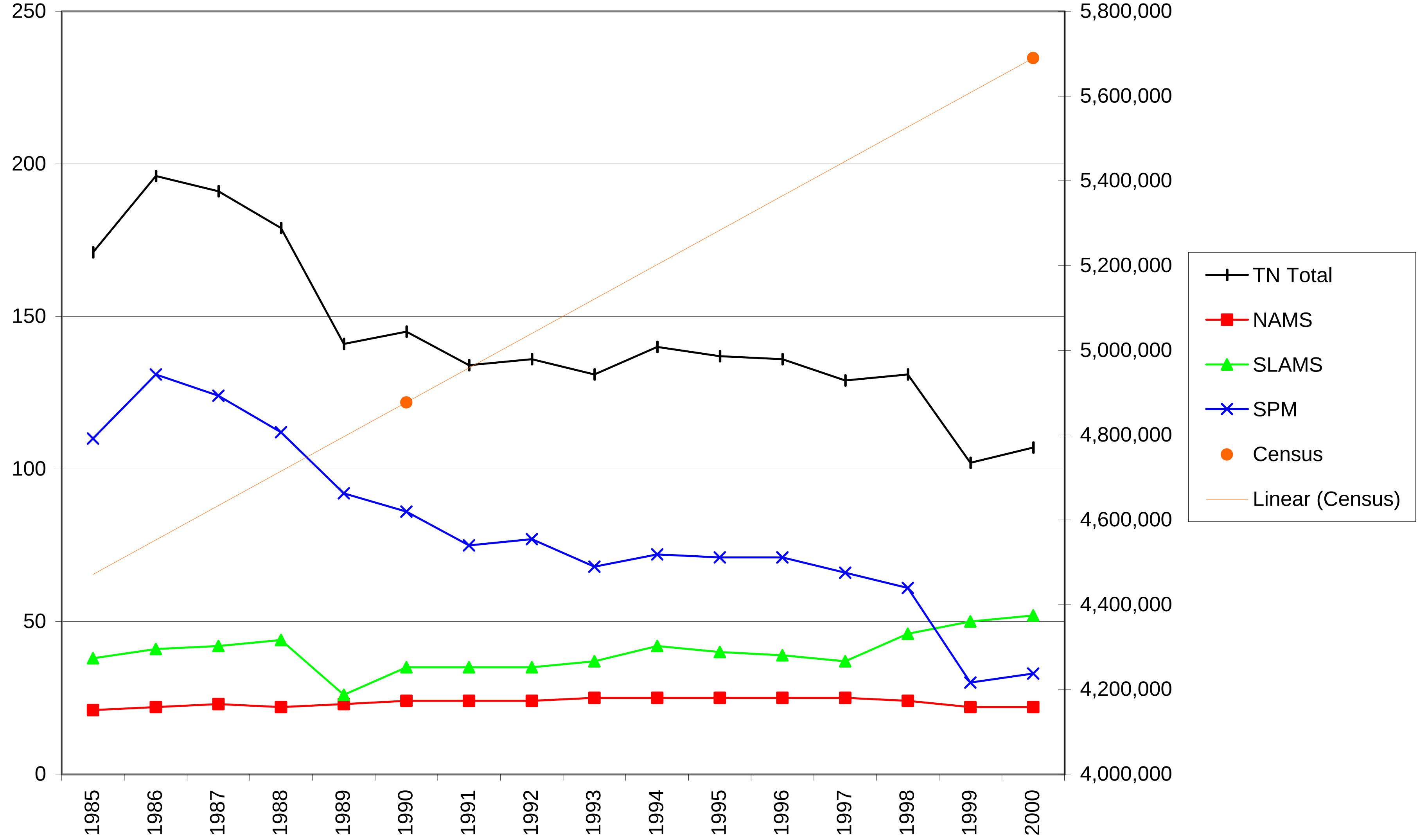
SC Terminated TSP



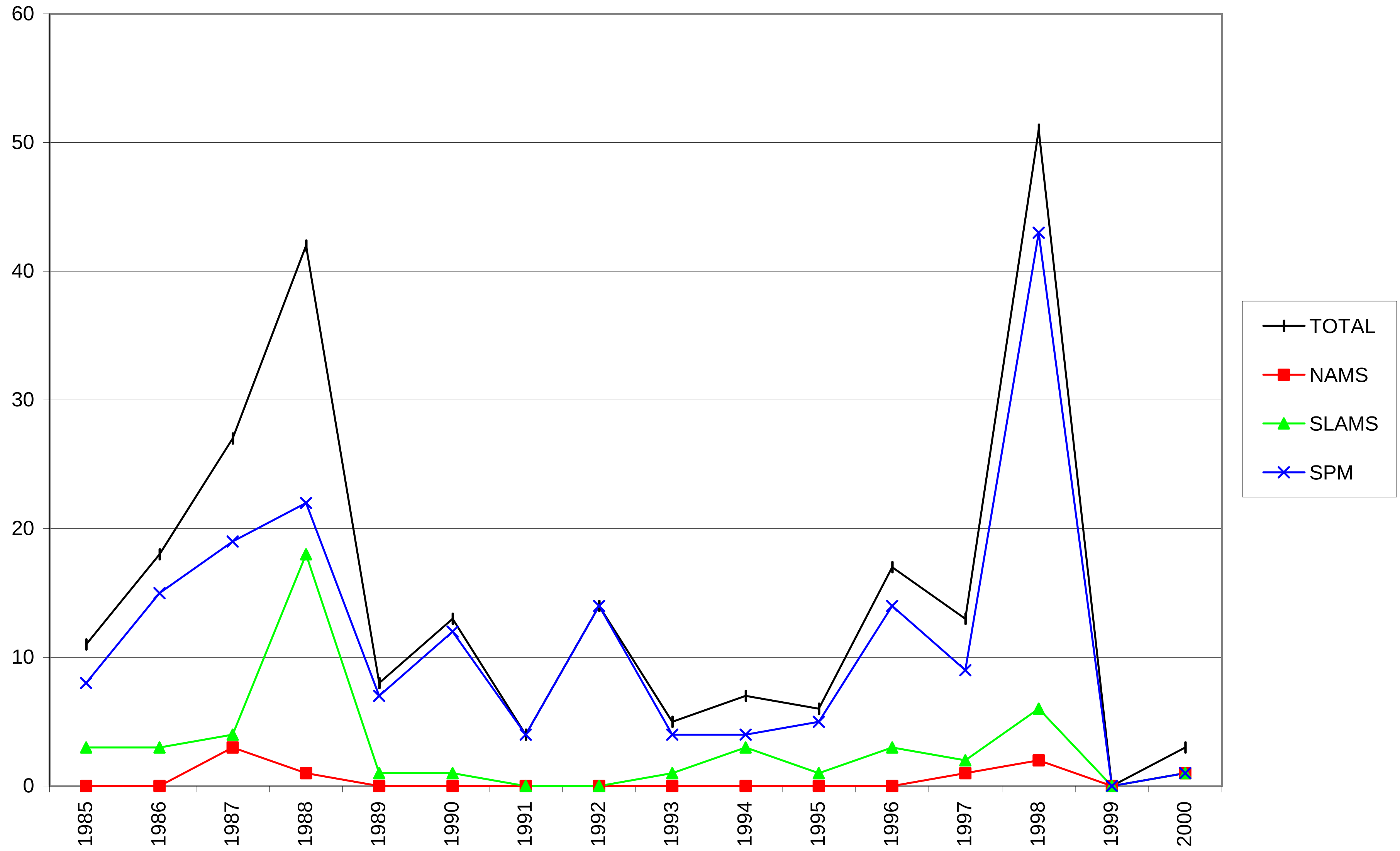


SC Population Growth
4,500,000
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
y = 2E-62x^20.705
R^2 = 0.983
Census
Power Fit

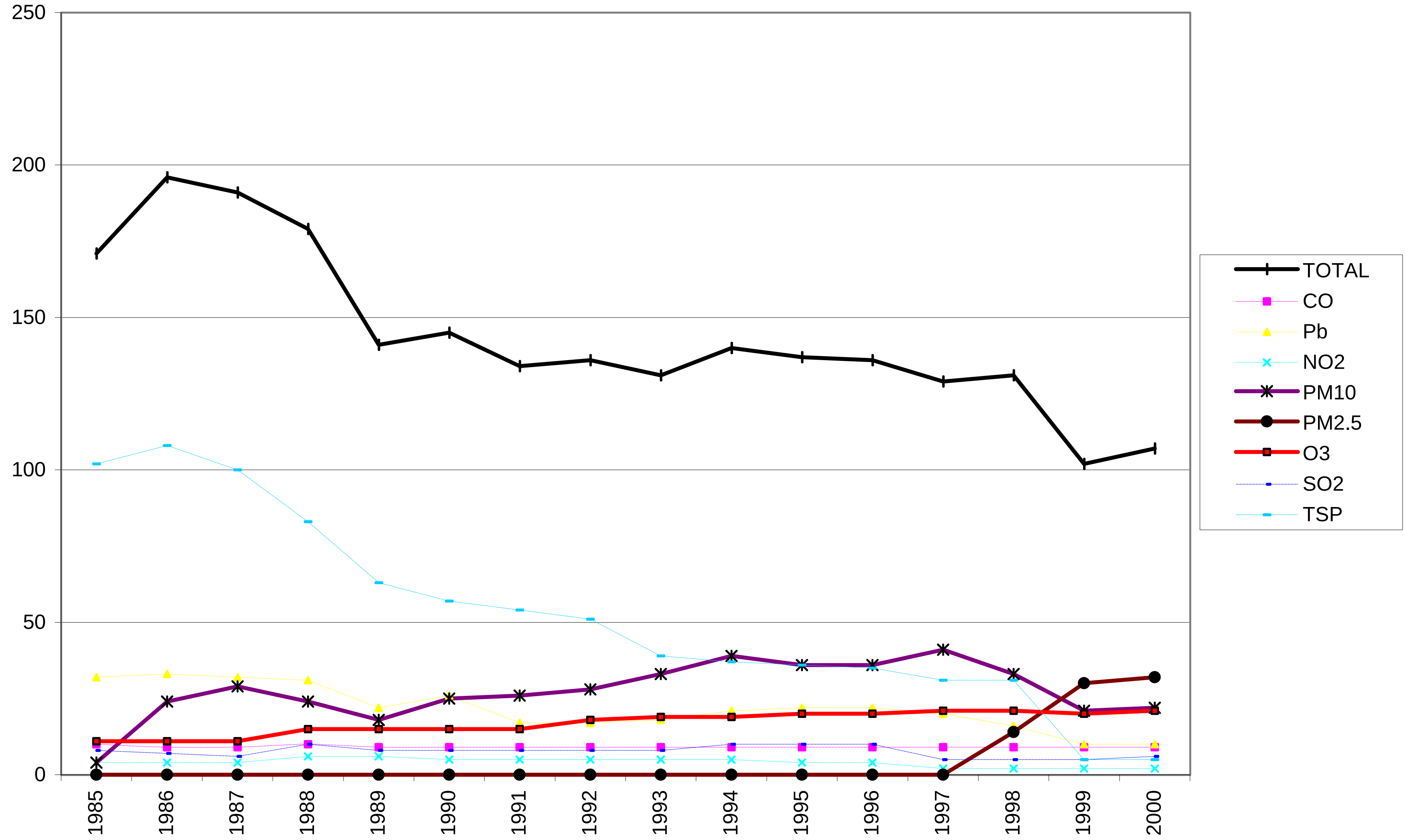
Tennessee Active Criteria



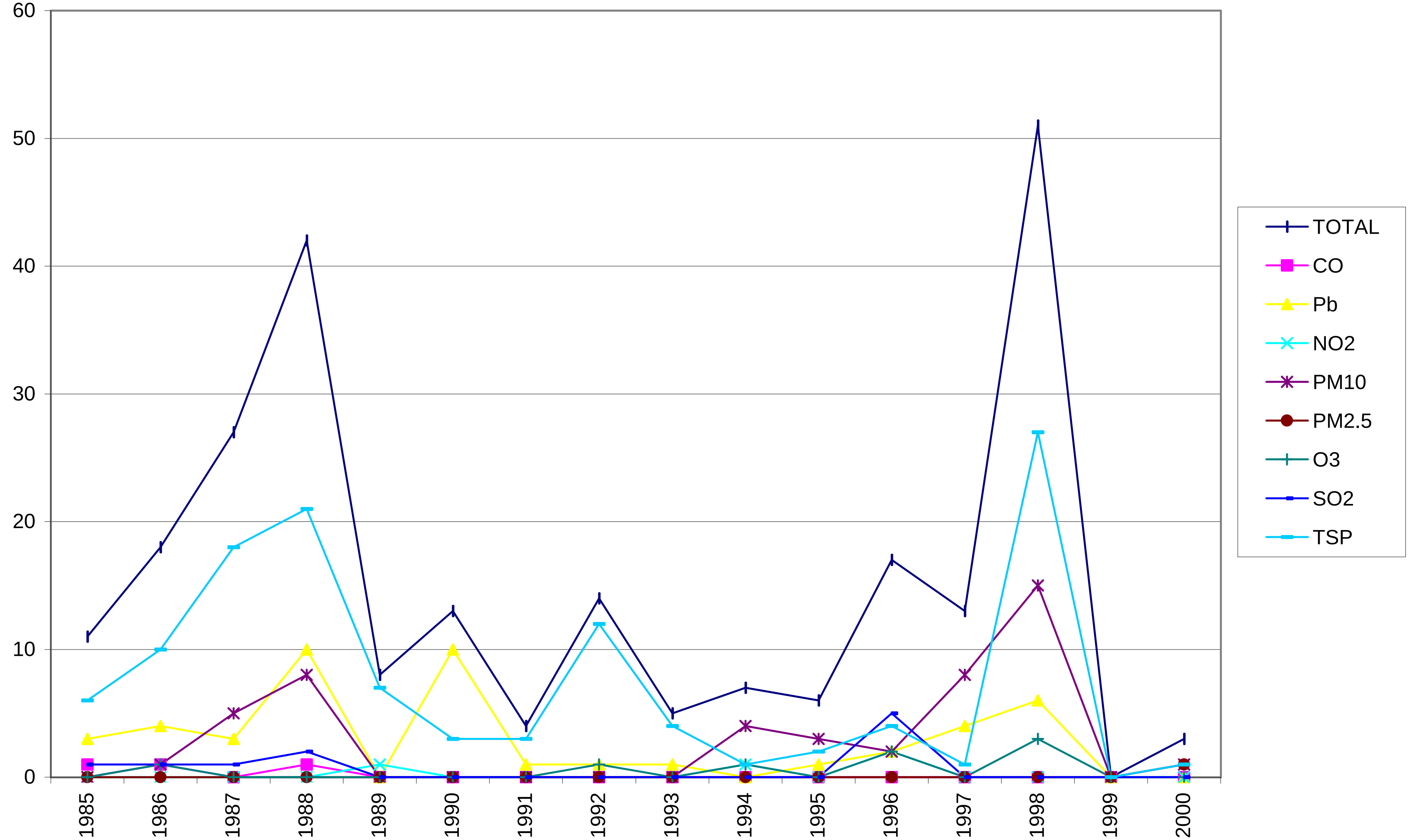
TN Terminated Parameters

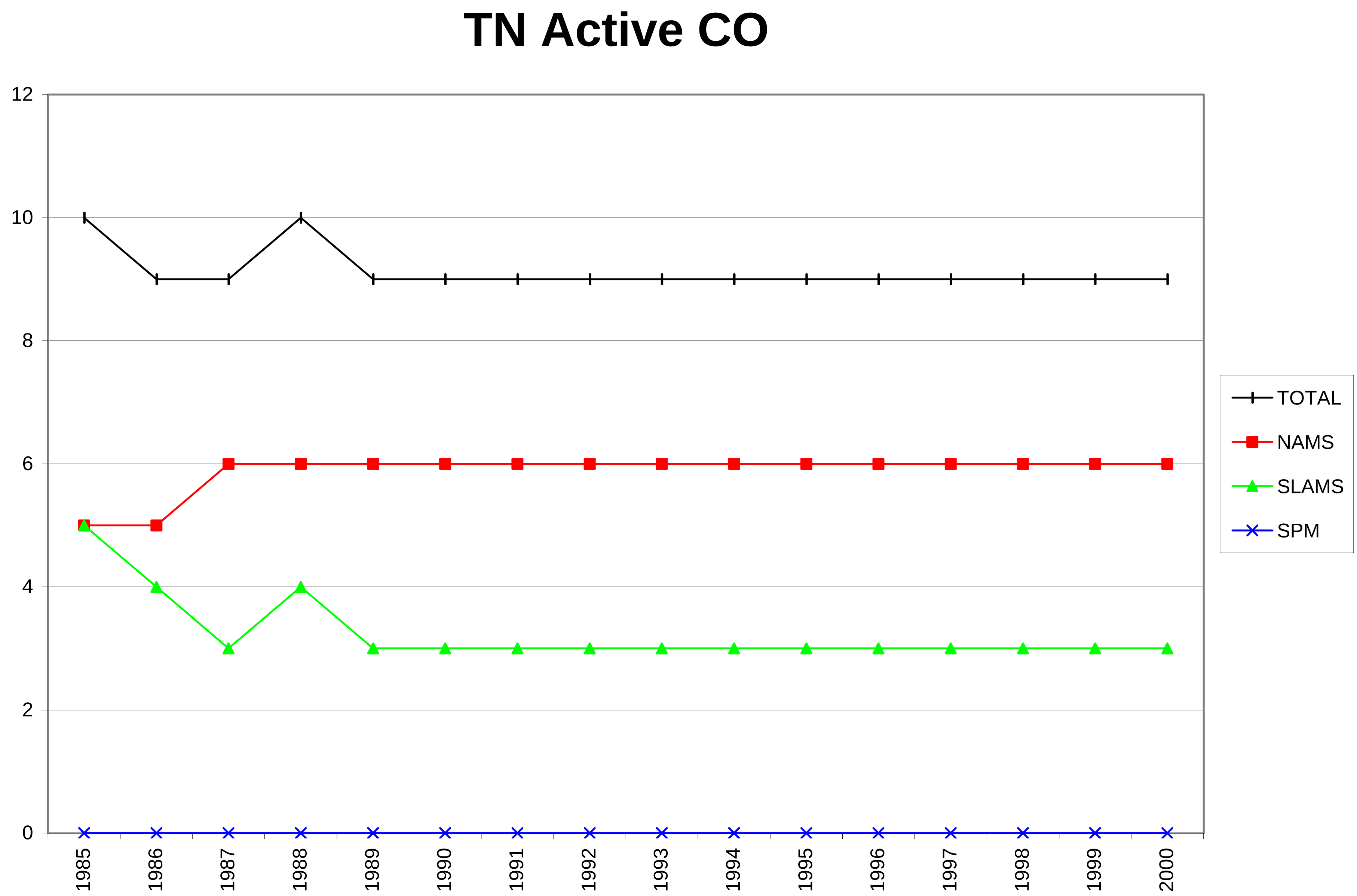


TN Active Criteria

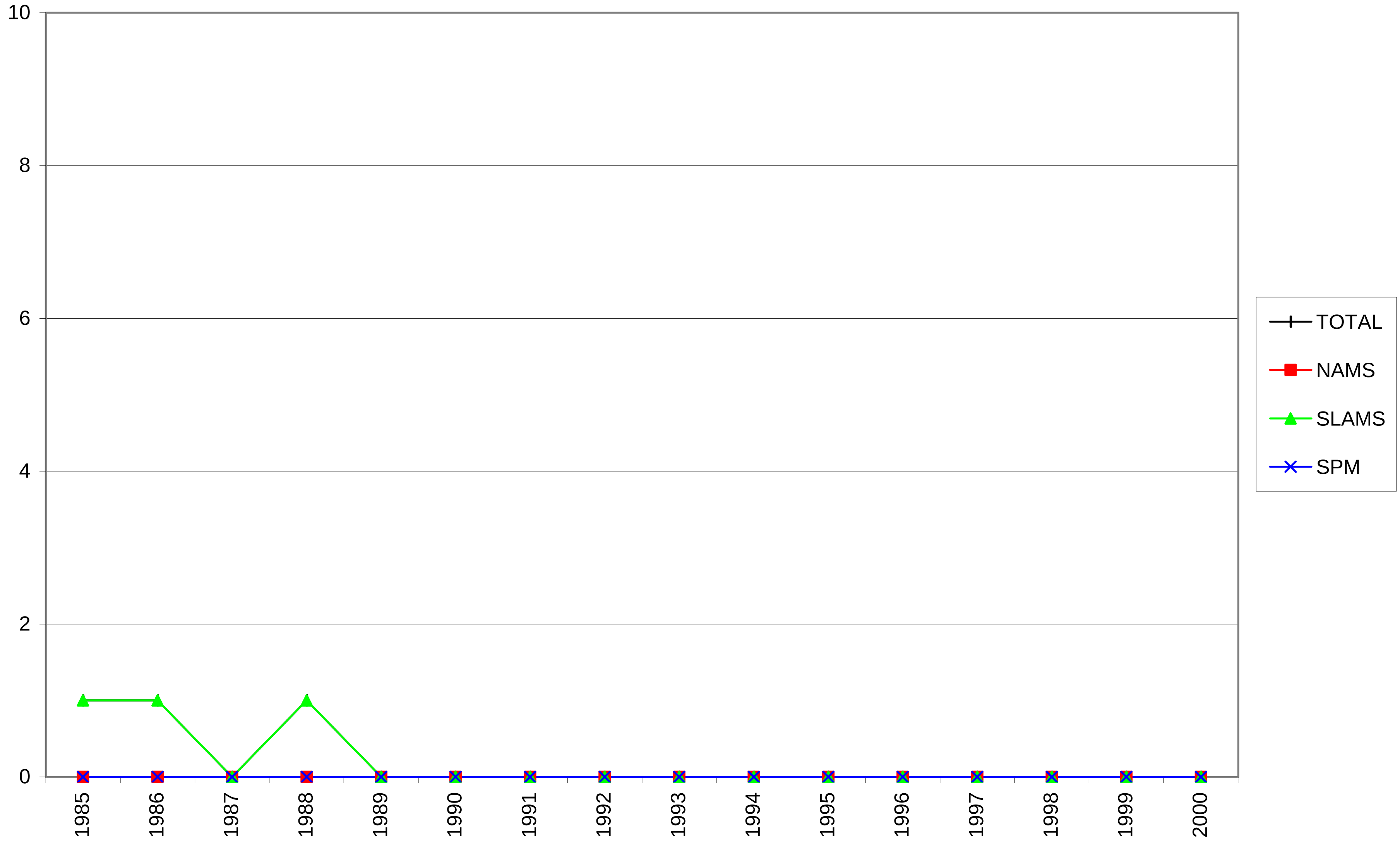


TN Terminated Parameters

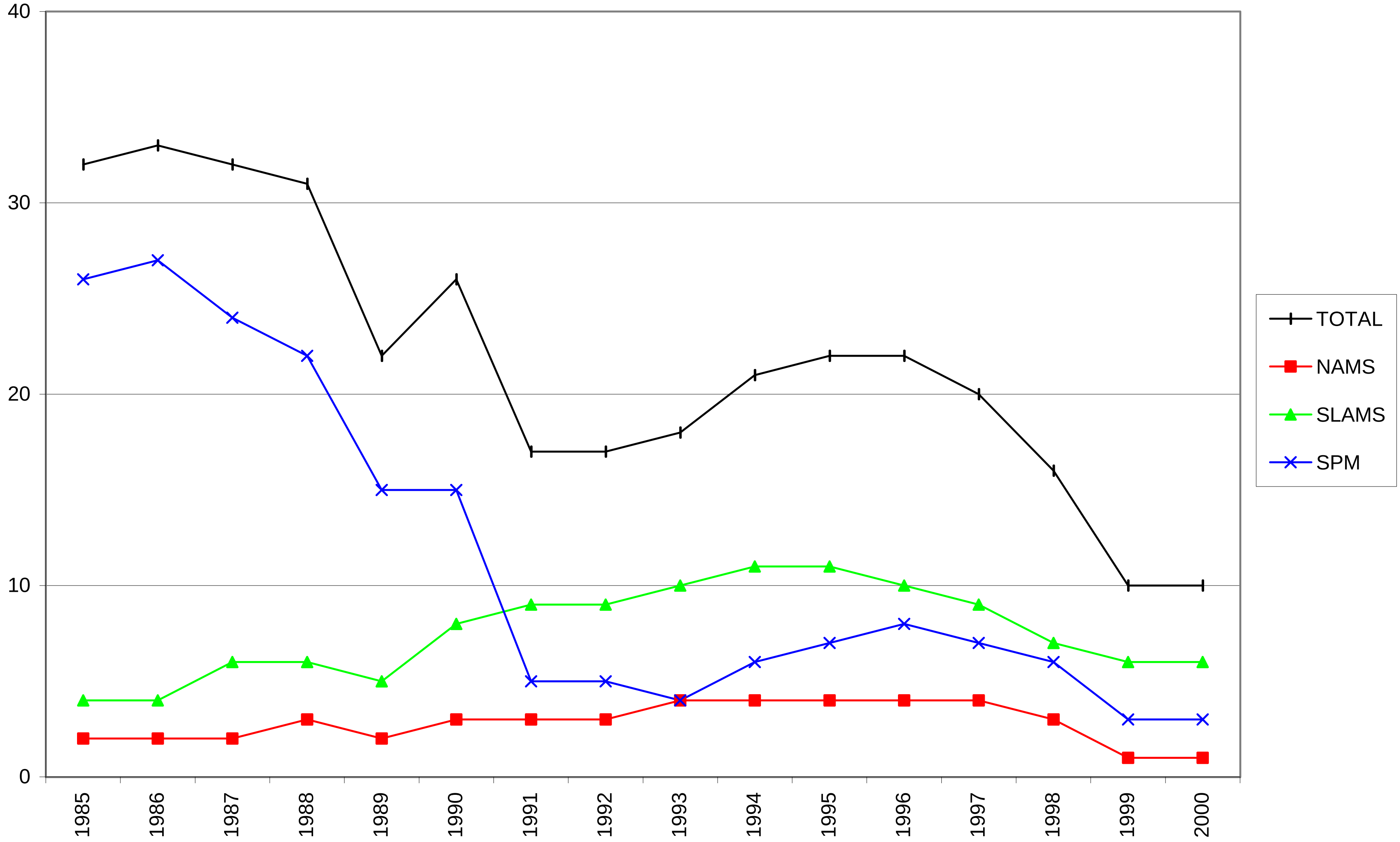



TN Active CO
12
10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

TN Terminated CO

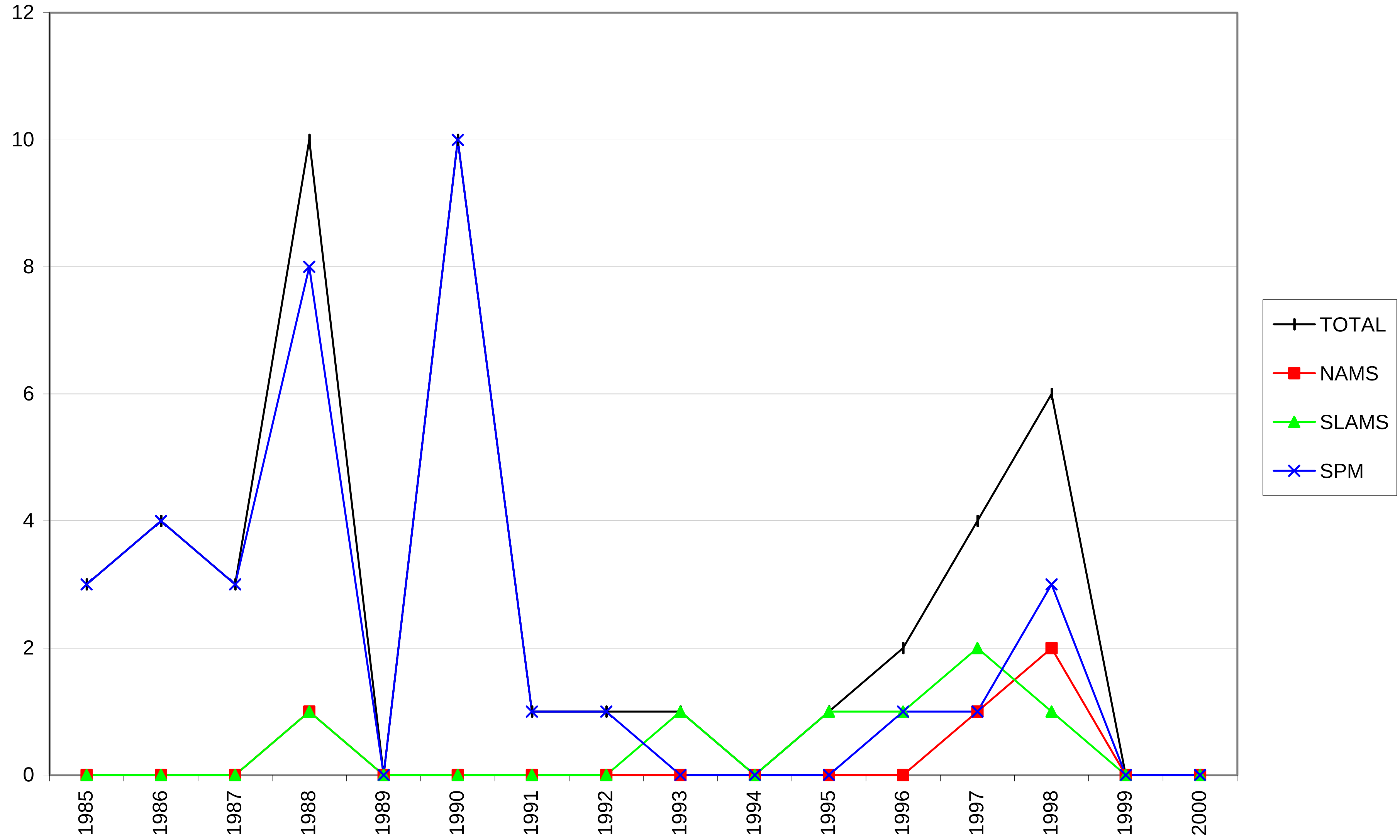


TN Active Pb

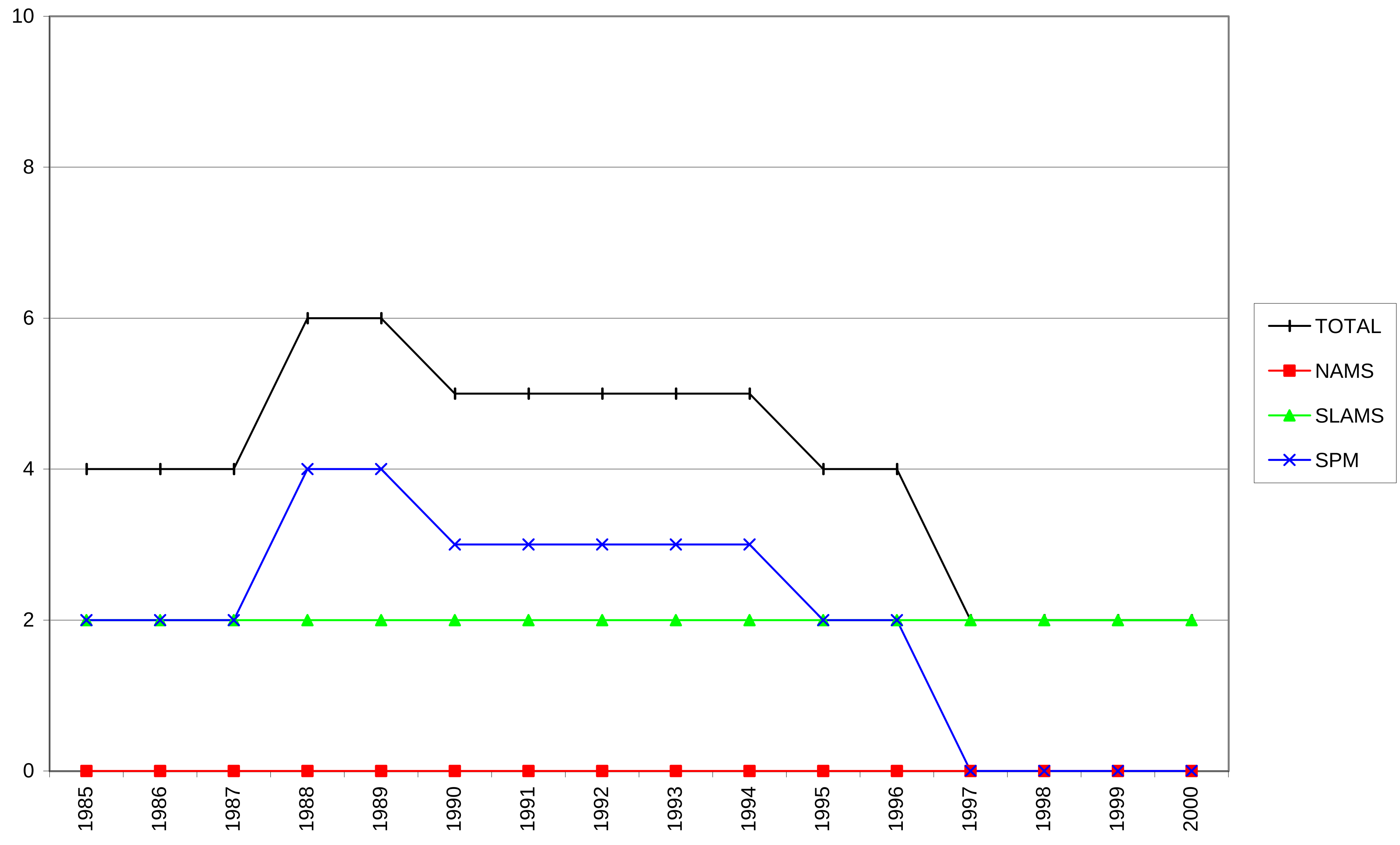


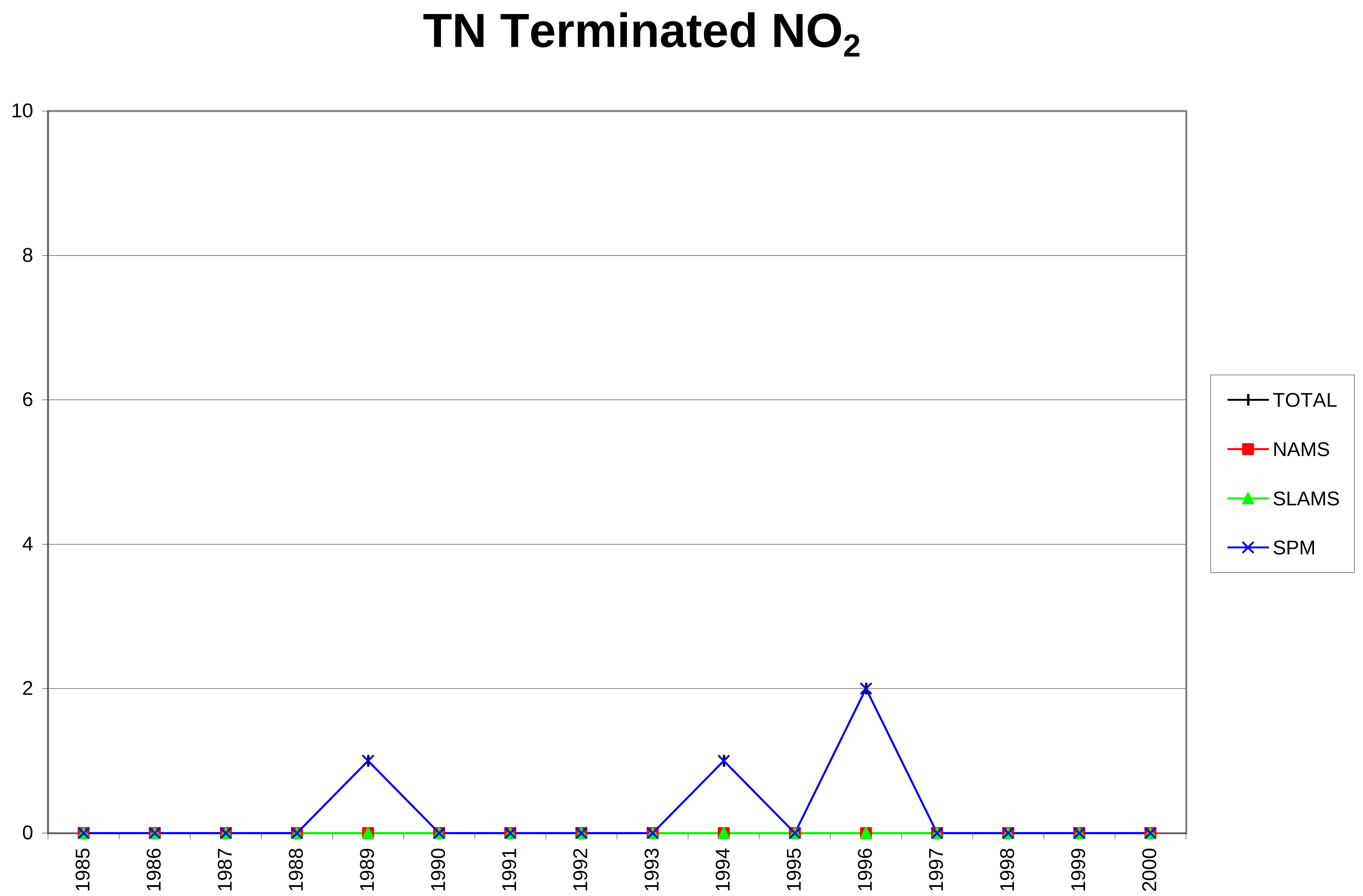
40
30
20
10
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

TN Terminated Pb

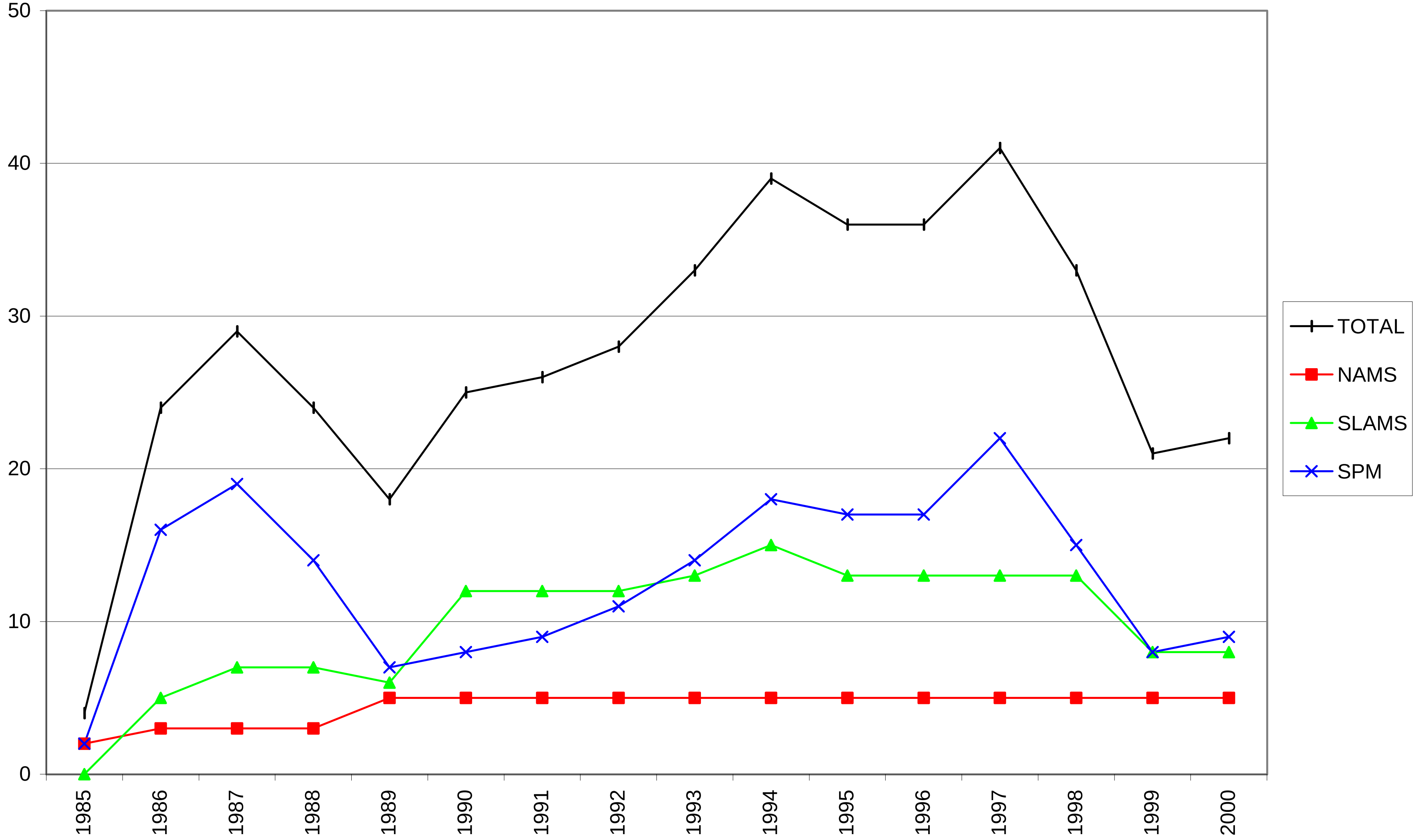


TN Active NO_2

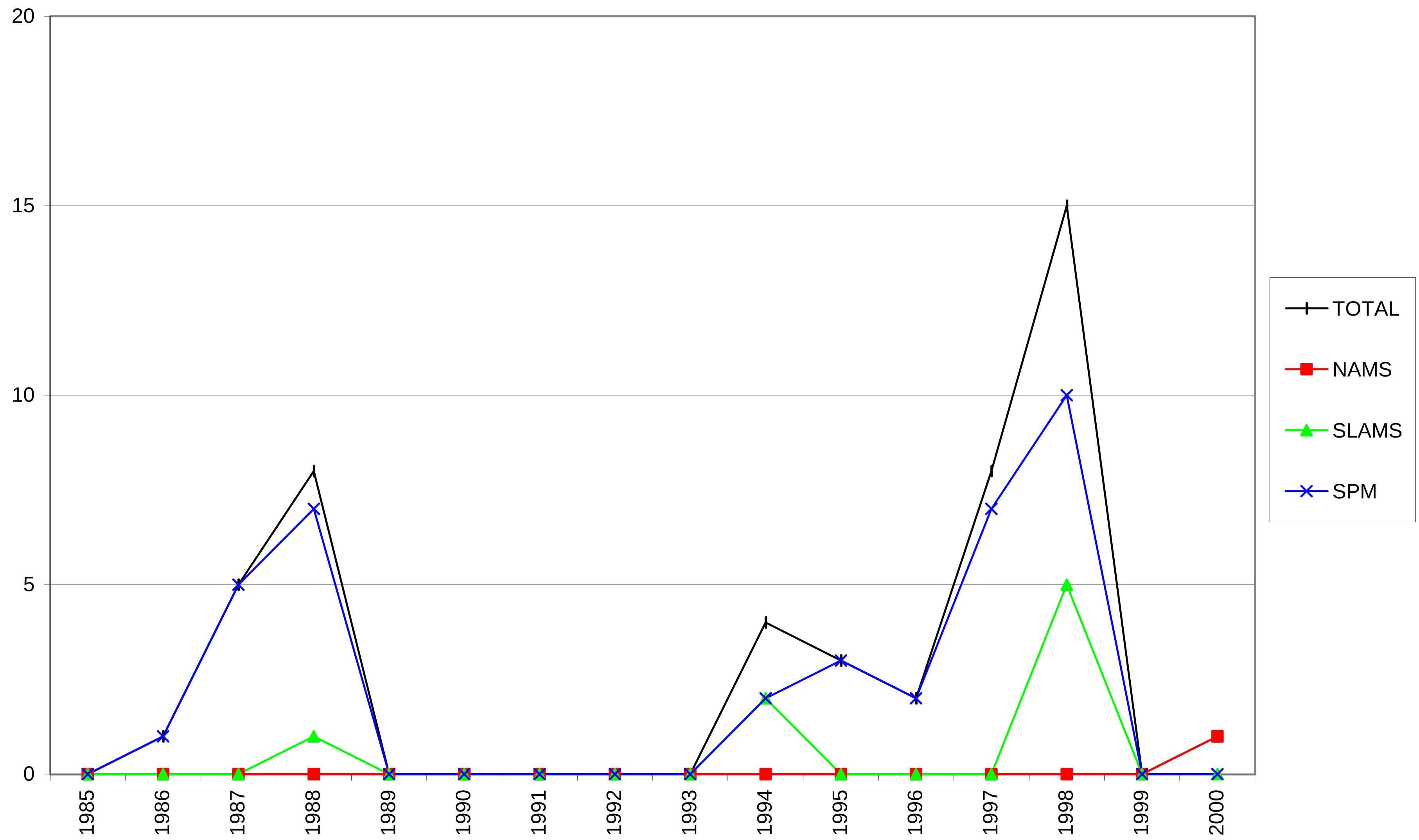



TN Terminated NO2
10
8
6
4
2
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

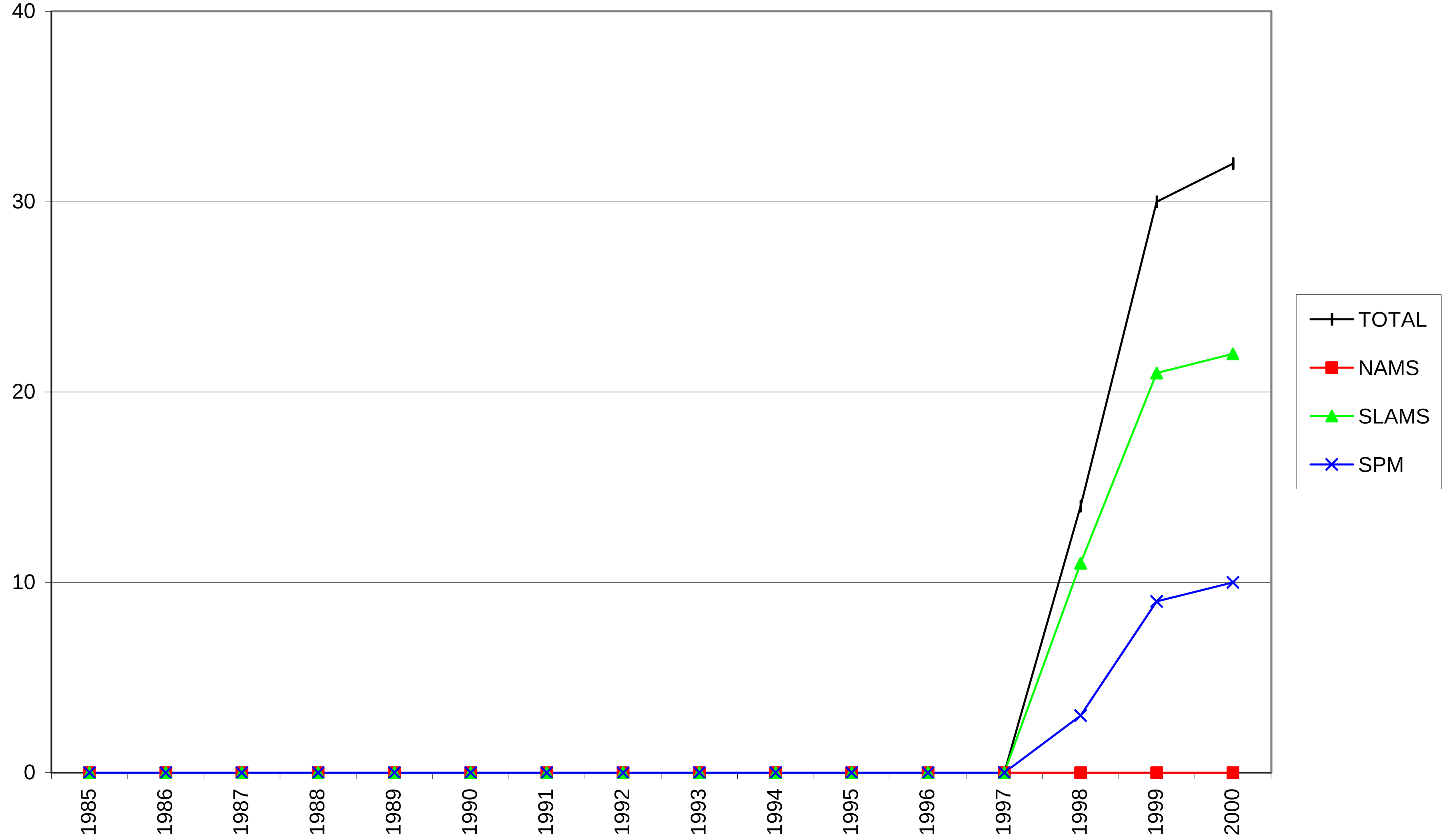
TN Active PM_{10}



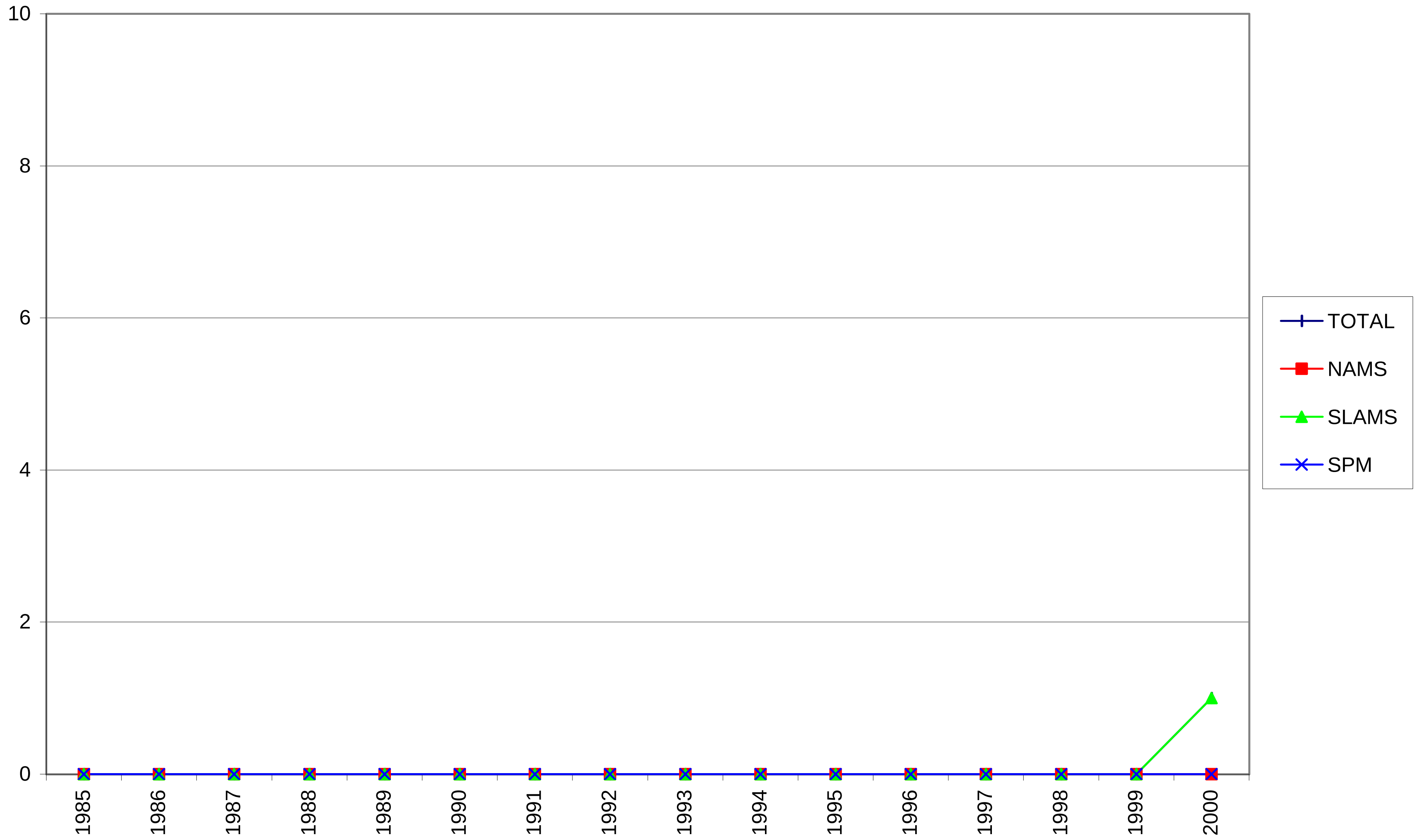
TN Terminated PM_{10}



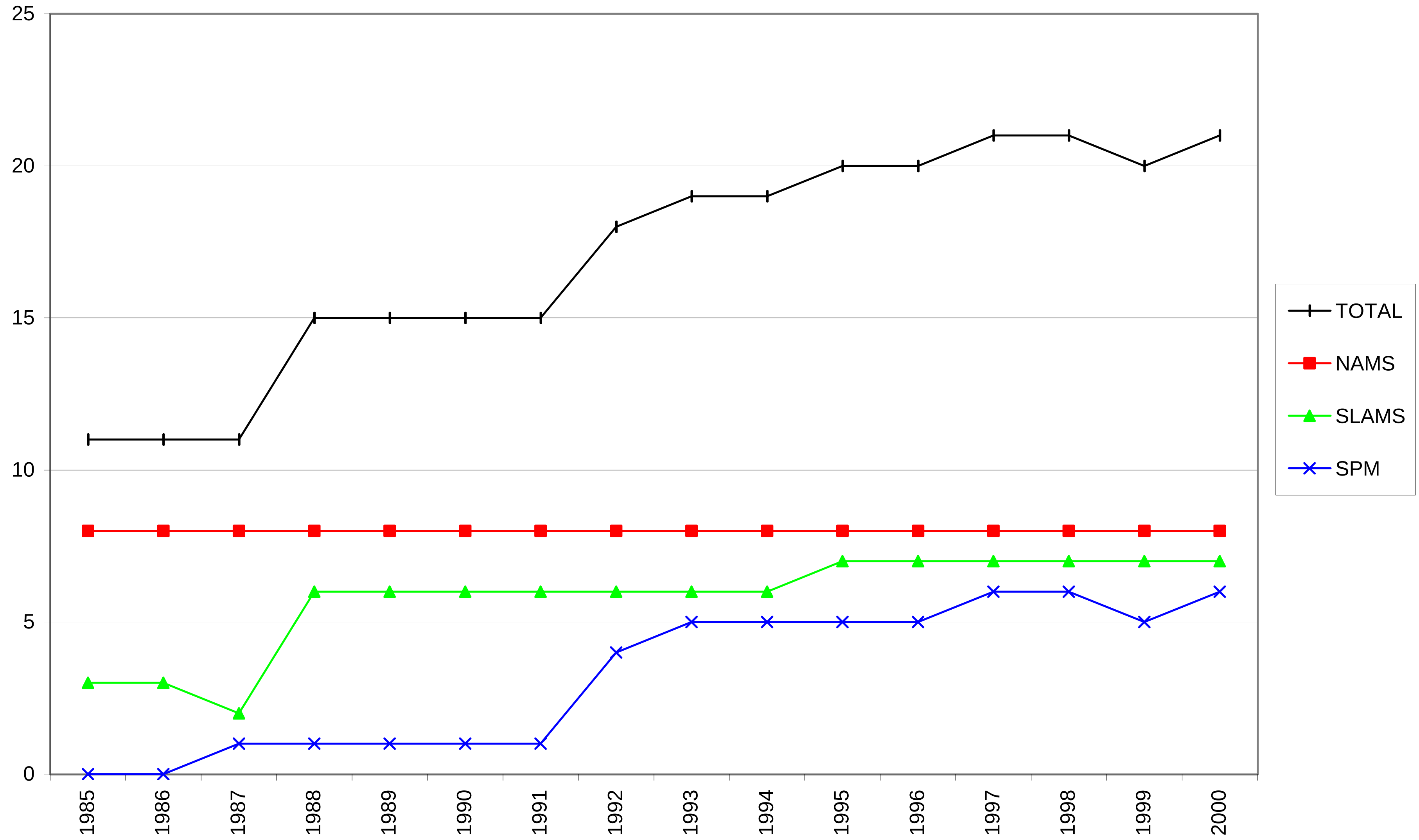
TN Active $PM_{2.5}$



TN Terminated $PM_{2.5}$

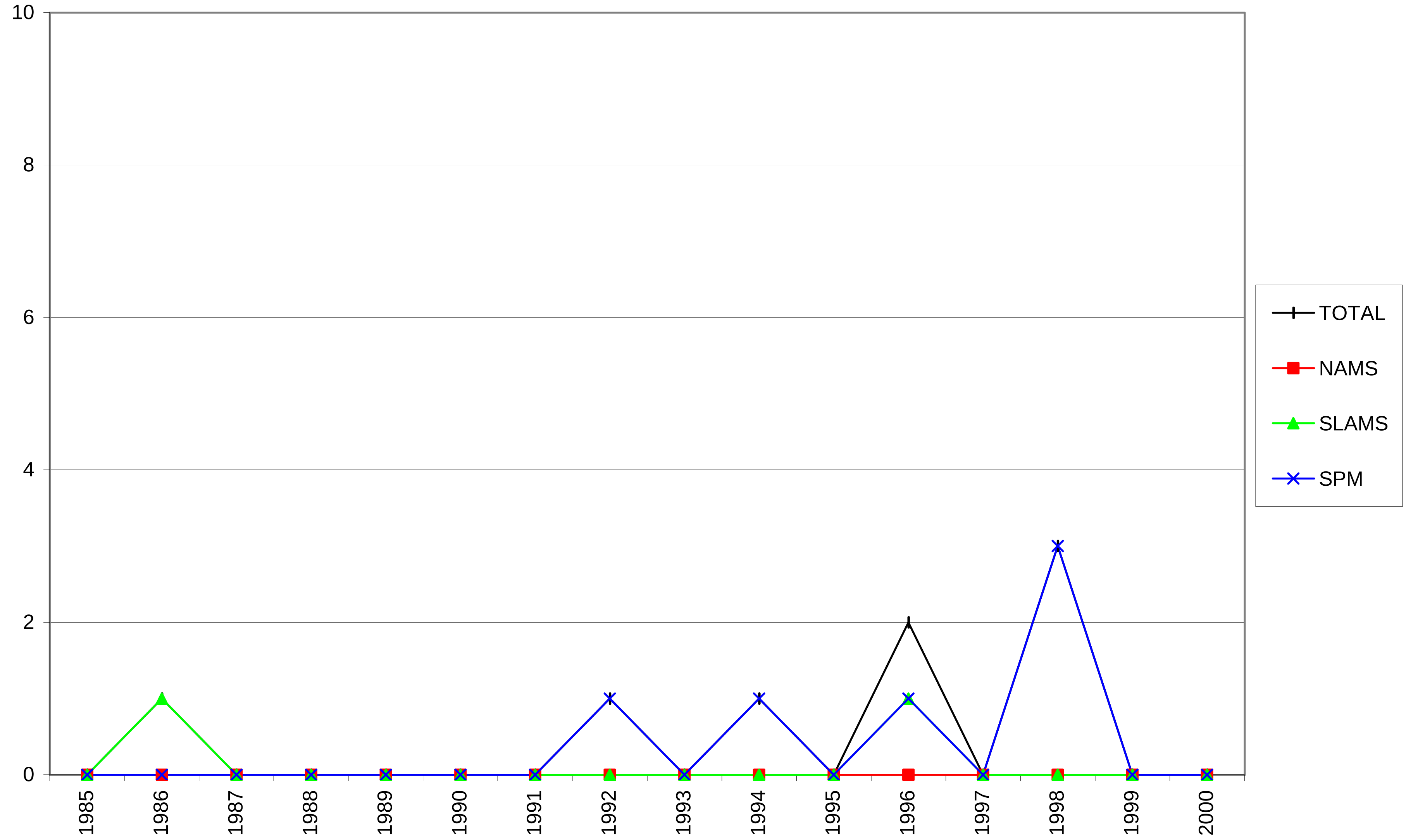


TN Active O_3

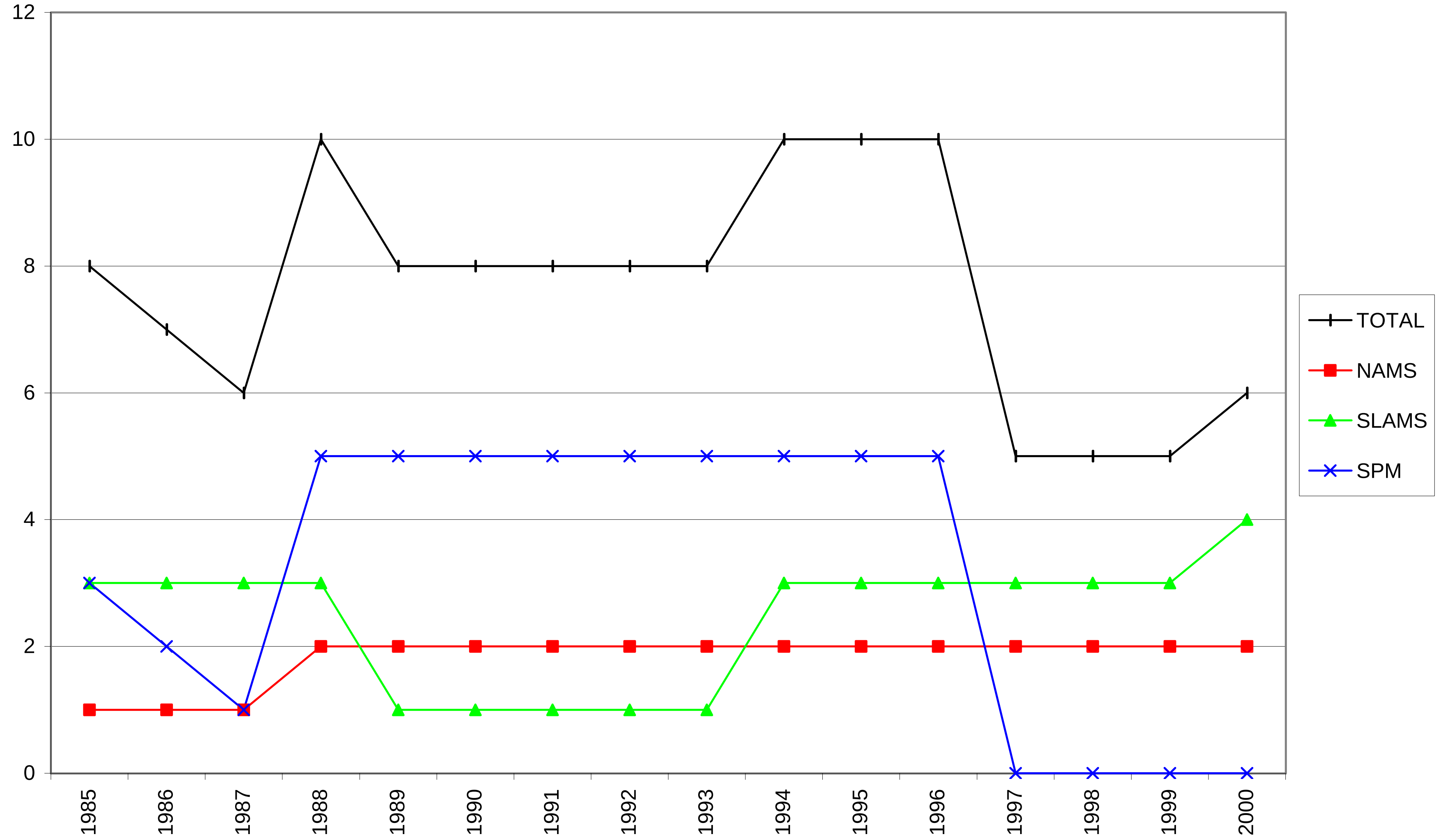


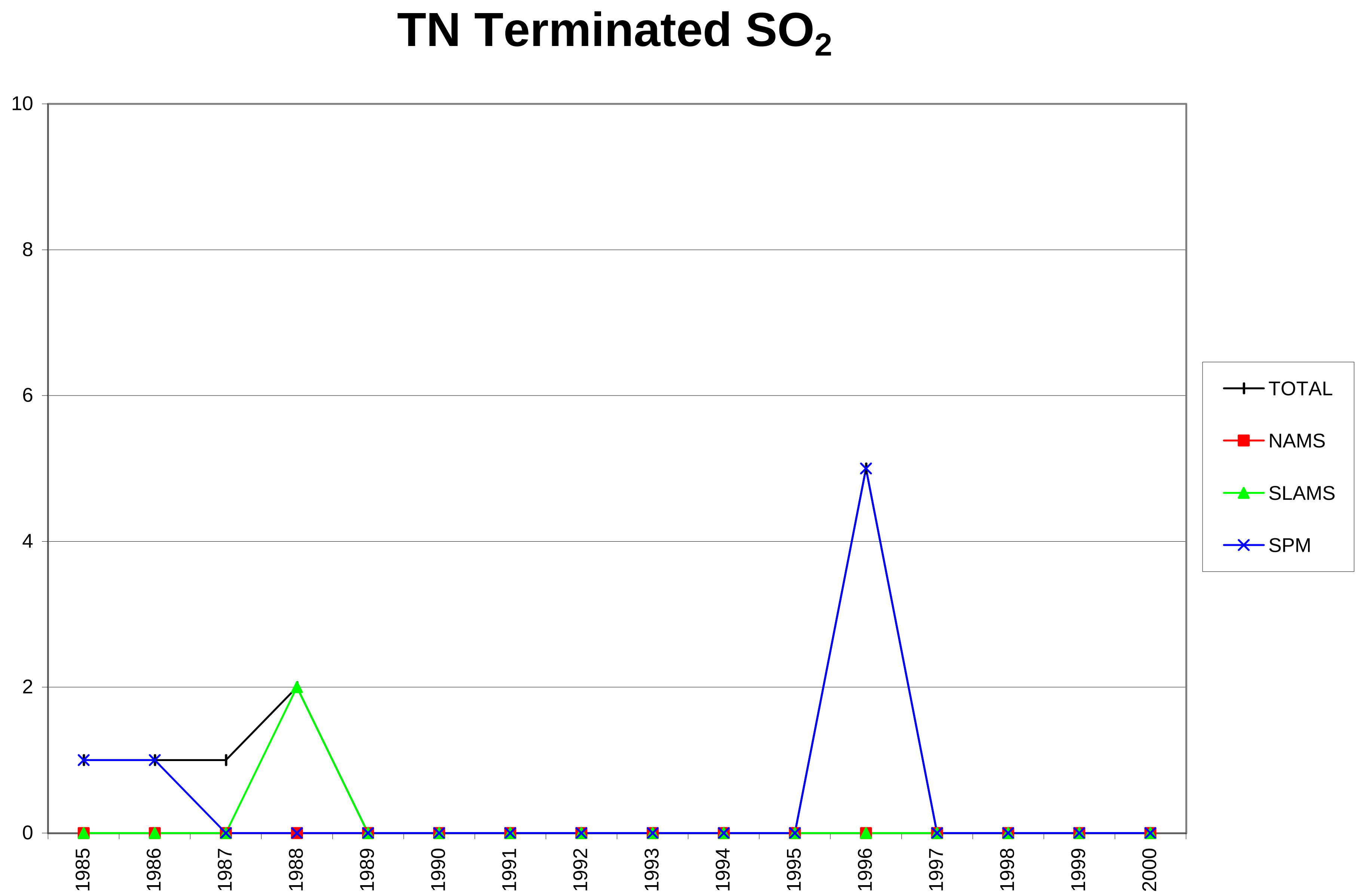
25
20
15
10
5
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

TN Terminated O_3

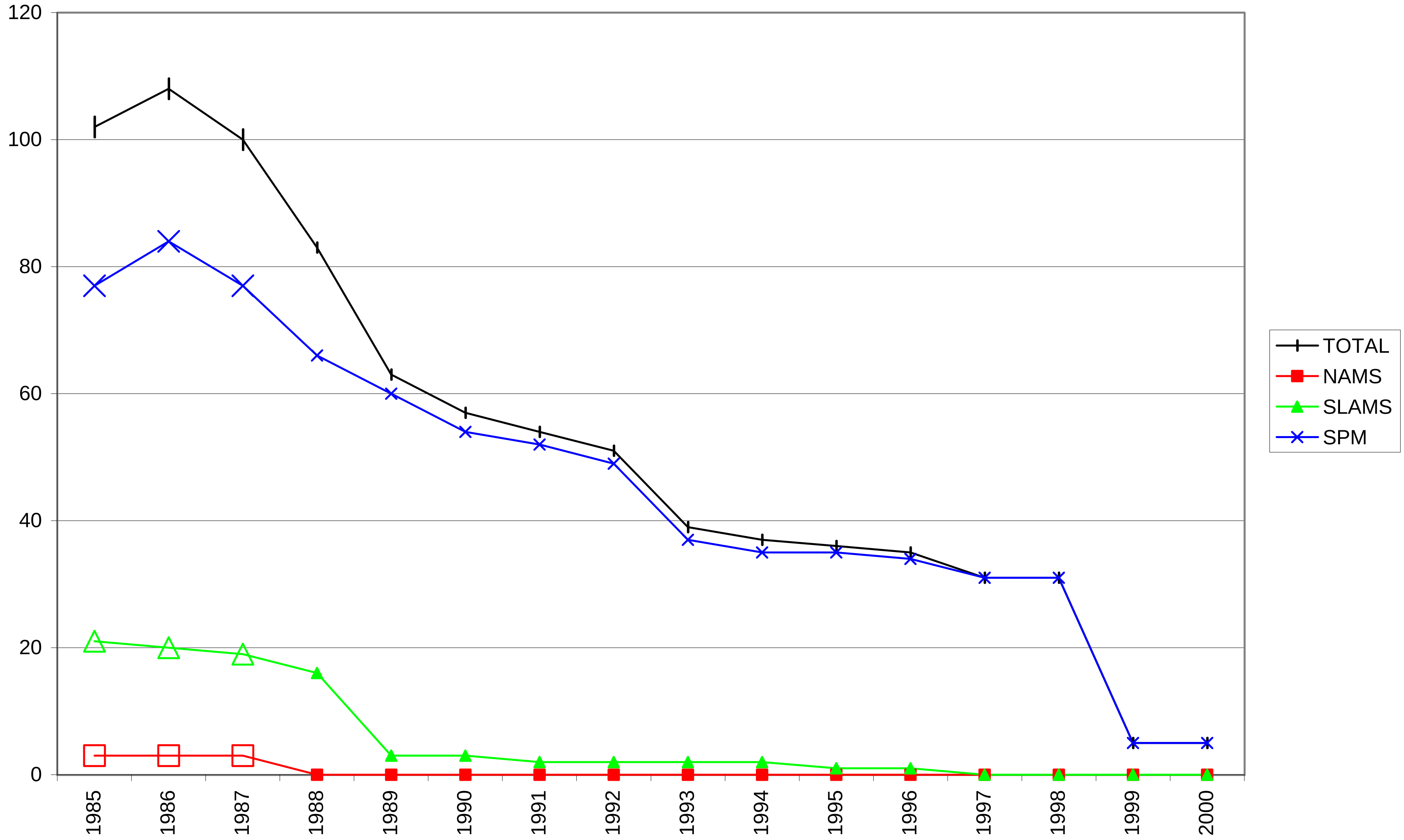


TN Active SO_2

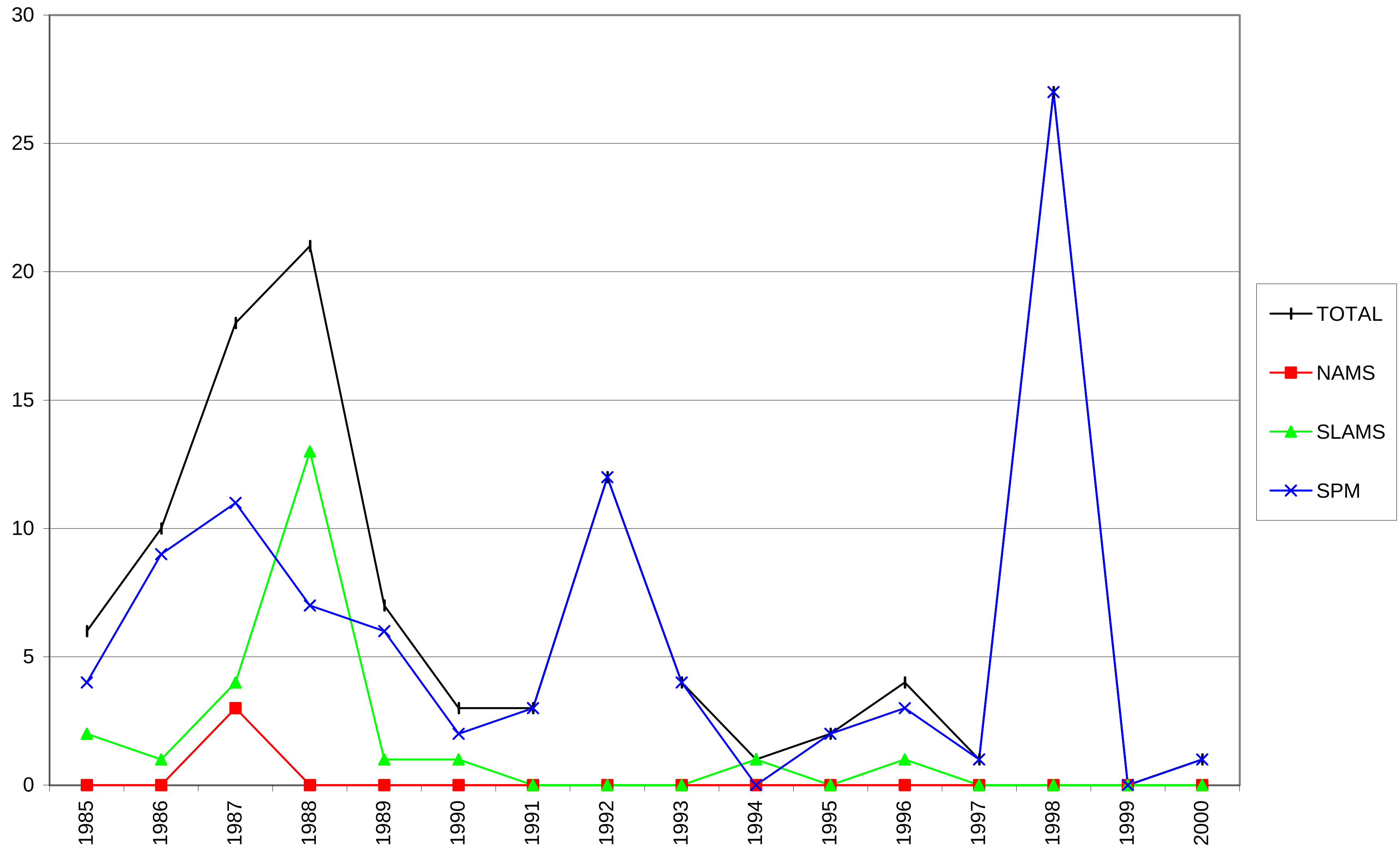


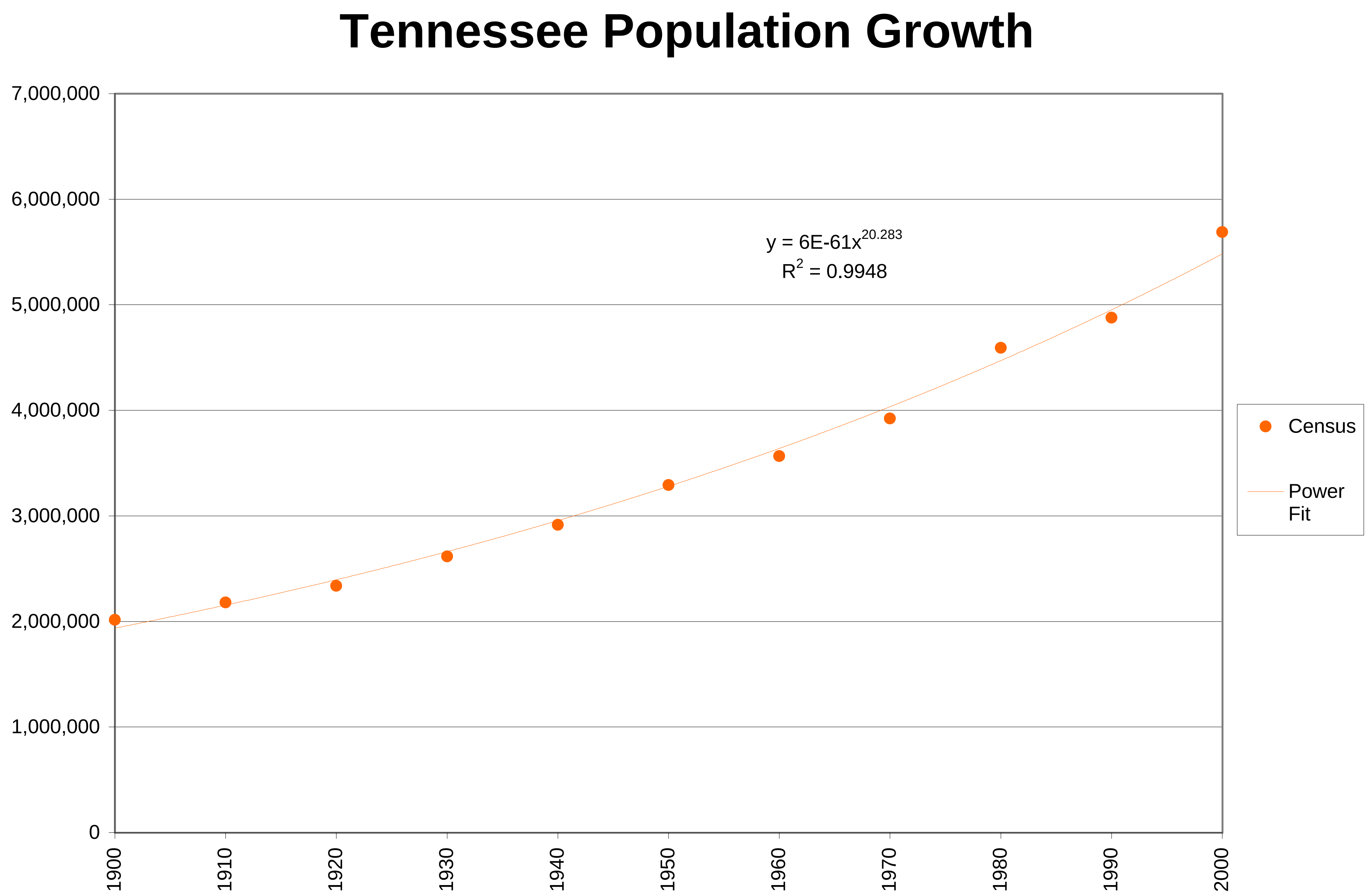

TN Terminated SO2
0
2
4
6
8
10
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
TOTAL
NAMS
SLAMS
SPM

TN ActiveTSP



TN Terminated TSP



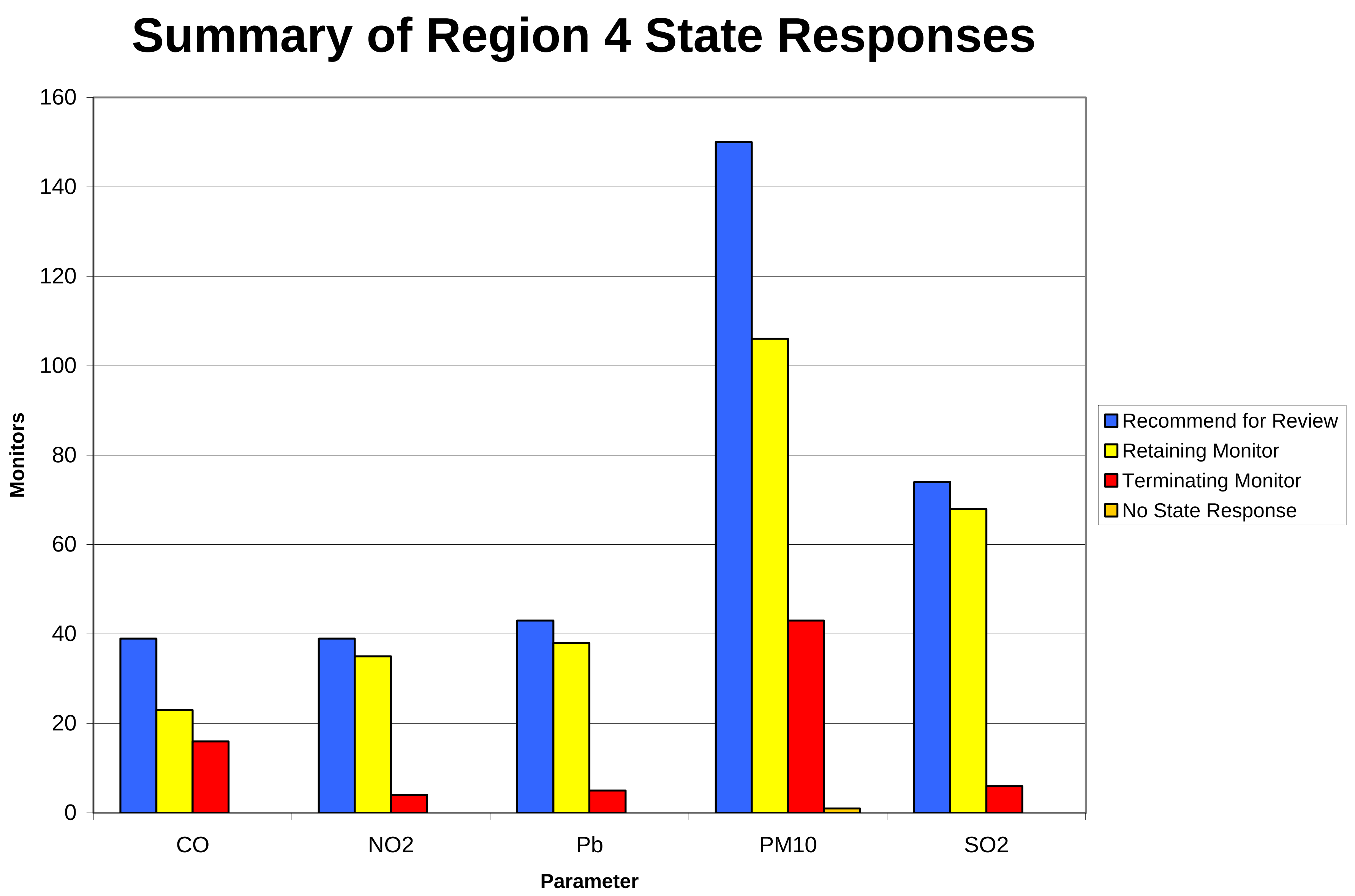


Tennessee Population Growth
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
y = 6E-61x^20.283
R^2 = 0.9948
Census
Power Fit

Appendix B-1

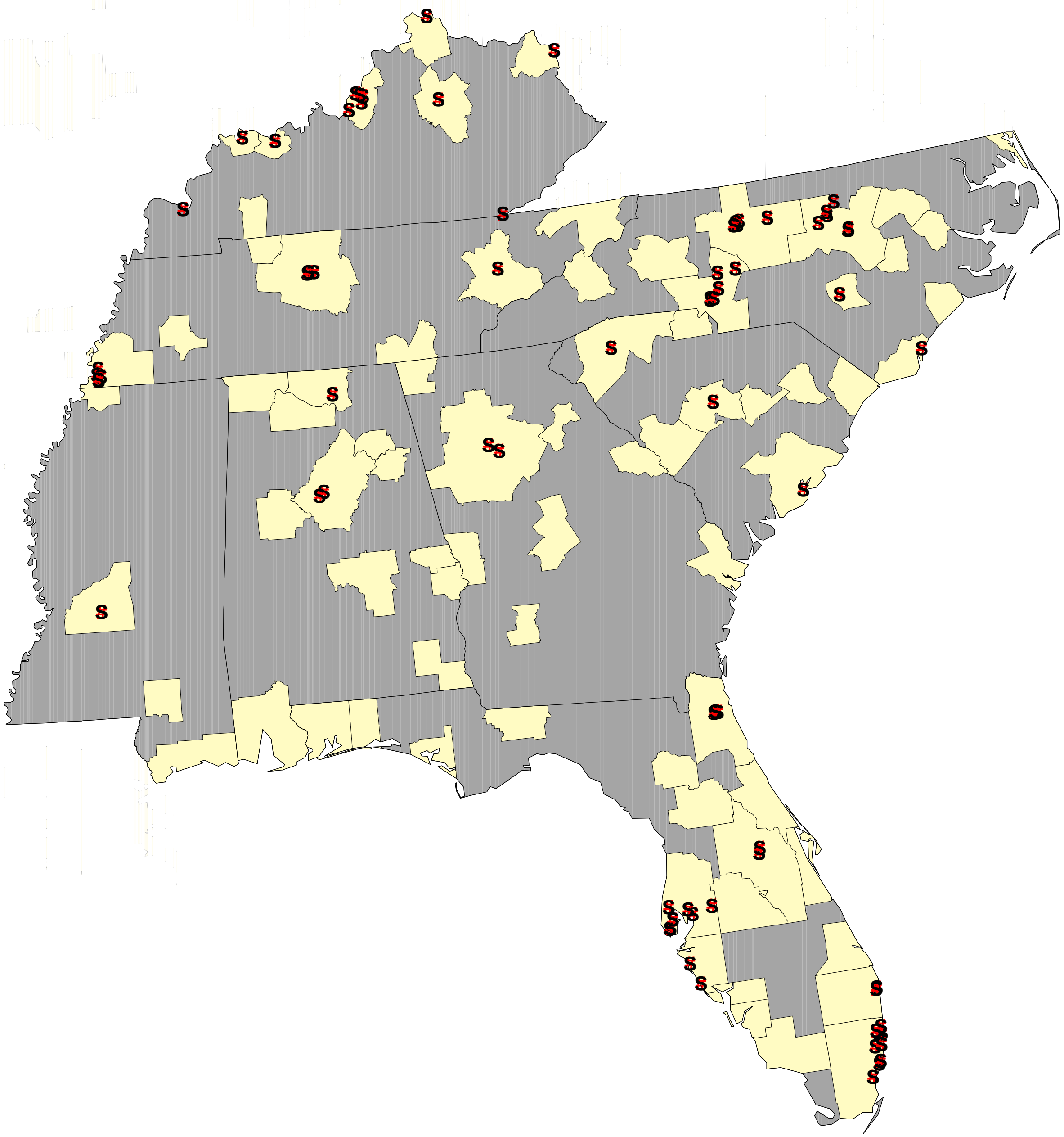
Assessment of Current Region 4 Network

Supporting documentation for Section IV. (A)
Network Assessments for CO, Pb, NO_2, PM_{10}, and SO_2


Summary of Region 4 State Responses
160
140
120
100
80
60
40
20
0
Monitors
CO
NO2
Pb
PM10
SO2
Parameter
Recommend for Review
Retaining Monitor
Terminating Monitor
No State Response

CO Monitors Active during CY 2000

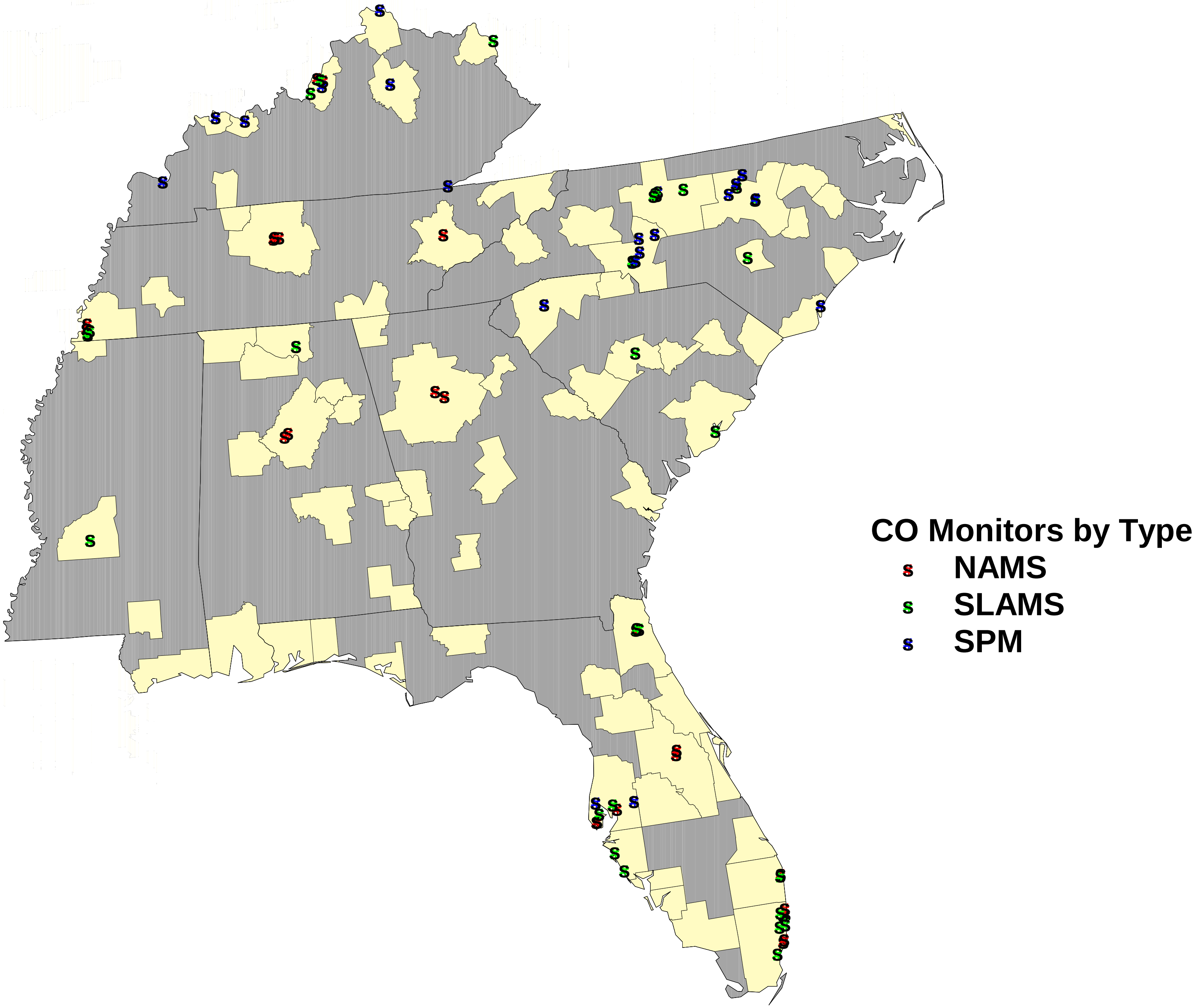
operated by Region 4 Agencies



Data gathered from old AIRS AMP380 report. Point data indicates monitors operated, not sites operated; therefore collocated monitor records also exist.
Also, monitors listed in the AMP380 as active, but that do not have any data associated with them, will also be shown.

CO Monitors Active during CY 2000

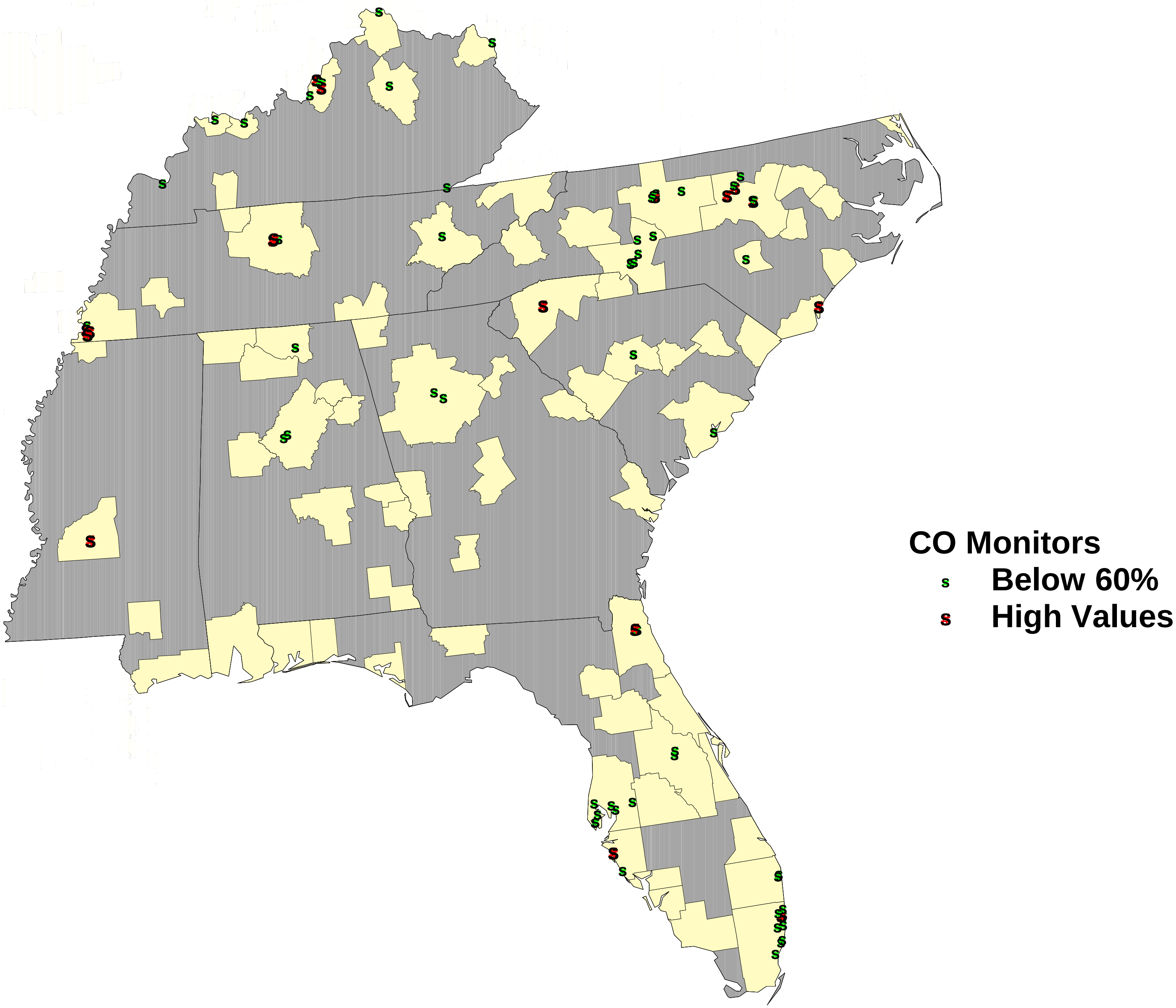
operated by Region 4 Agencies



Data gathered from old AIRS AMP380 report. Point data indicates monitors operated, not sites operated; therefore collocated monitor records also exist.
Also, monitors listed in the AMP380 as active, but that do not have any data associated with them, will also be shown.

CO Monitors Active during CY 2000

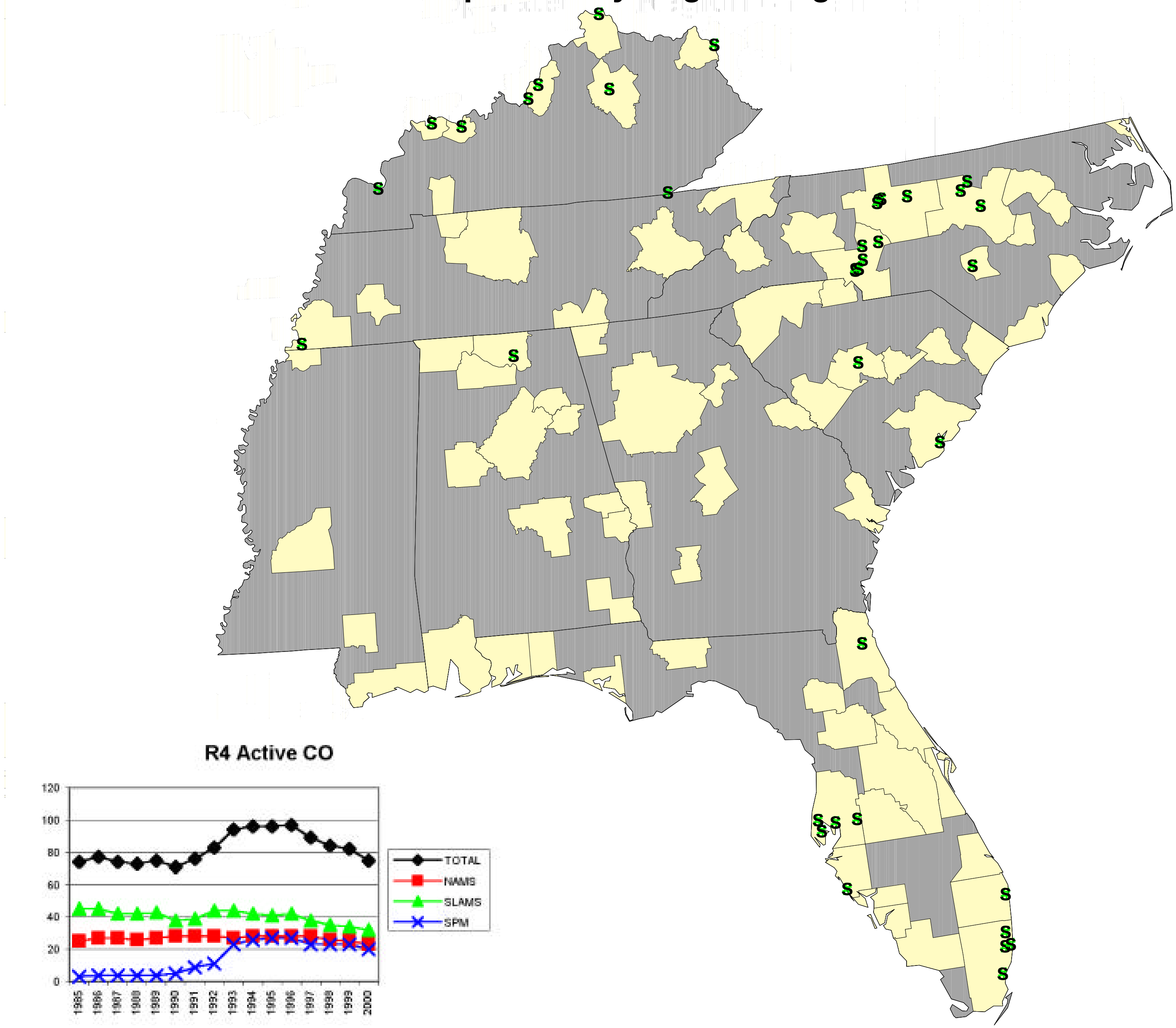
operated by Region 4 Agencies



Site data gathered from old AIRS AMP380 report. Point data indicates monitors operated, not sites operated; therefore collocated monitor records also exist.
Concentration data gathered from New AIRS-AQS AMP450 report.

Non Required CO Monitors Active during CY 2000

operated by Region 4 Agencies



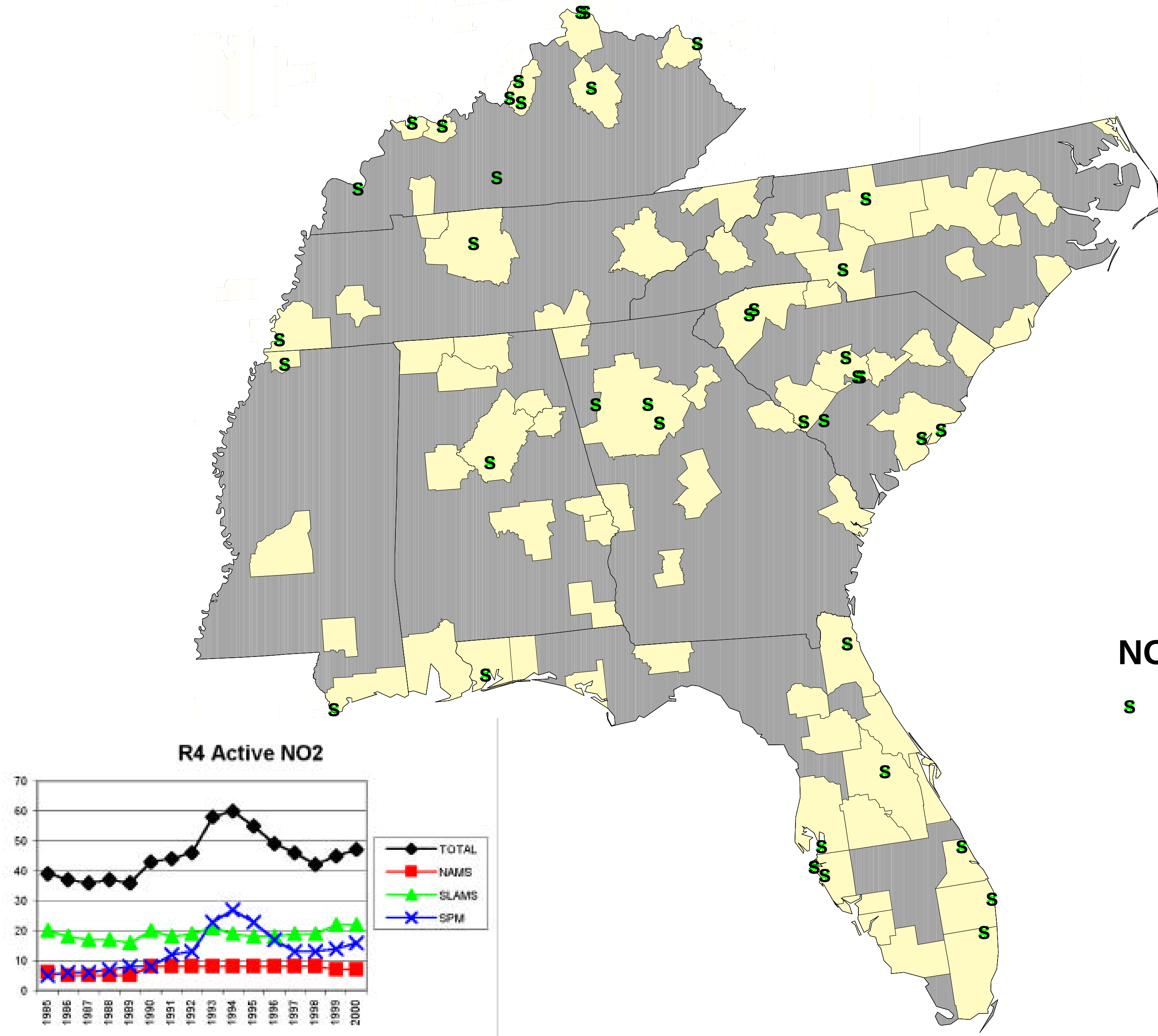
CO Monitors

S Non-required monitors
Below 60% NAAQS

Site data gathered from old AIRS AMP380 report. Point data indicates monitors operated, not sites operated; therefore collocated monitor records also exist.
Concentration data gathered from New AIRS-AOS AMP450 report. Historic trends graphic complied from old ARIS-AOS AMP380 workfile.

Non Required NO2 Monitors Active during CY 2000

operated by Region 4 Agencies



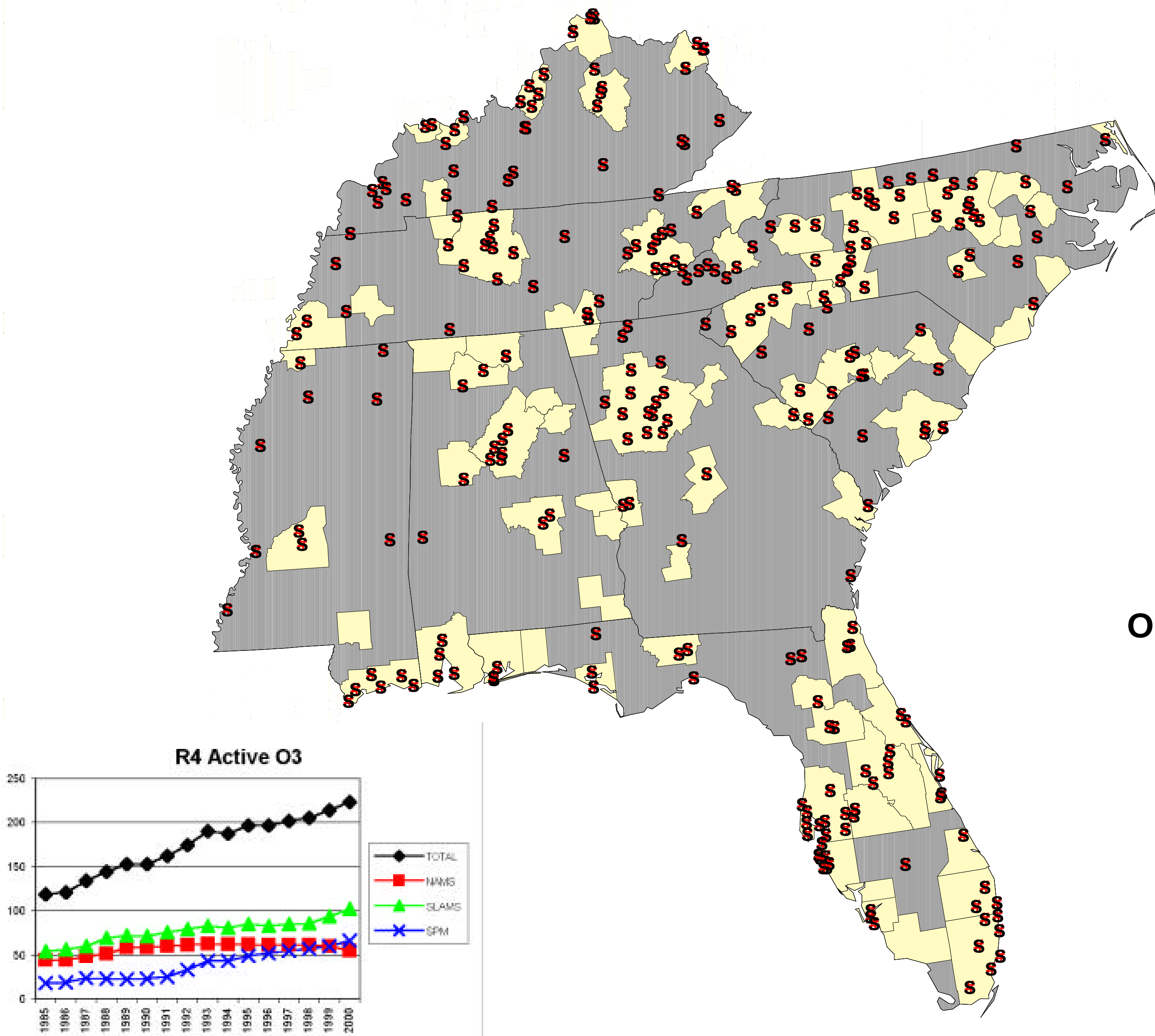
NO2 Monitors

S **Non-required monitors Below 60% NAAQS**

Site data gathered from old AIRS AMP380 report. Point data indicates monitors operated, not sites operated; therefore collocated monitor records also exist.
Concentration data gathered from New AIRS-AOS AMP450 report. Historic trends graphic complied from old ARIS-AOS AMP380 workfile.

Ozone Monitors Active during CY 2000

operated by Region 4 Agencies



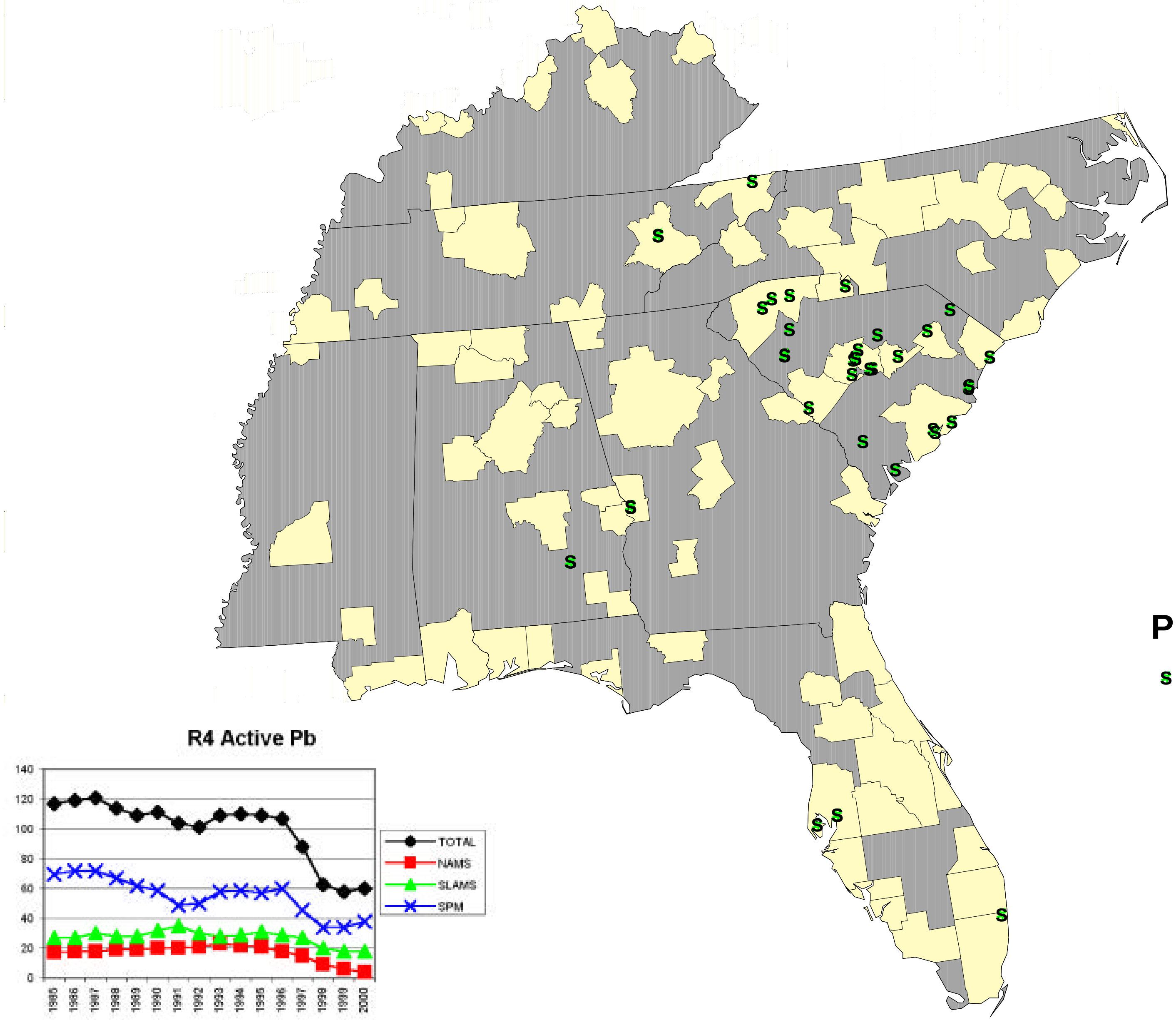
Ozone Monitoring

- S Design Value Below 60%
- S High Value

Site data gathered from old AIRS AMP380 report. Point data indicates monitors operated, not sites operated; therefore collocated monitor records also exist.
Concentration data gathered from New AIRS-AOS AMP450 report. Historic trends graphic complied from old ARIS-AOS AMP380 workfile.

Non Required Pb Monitors Active during CY 2000

operated by Region 4 Agencies



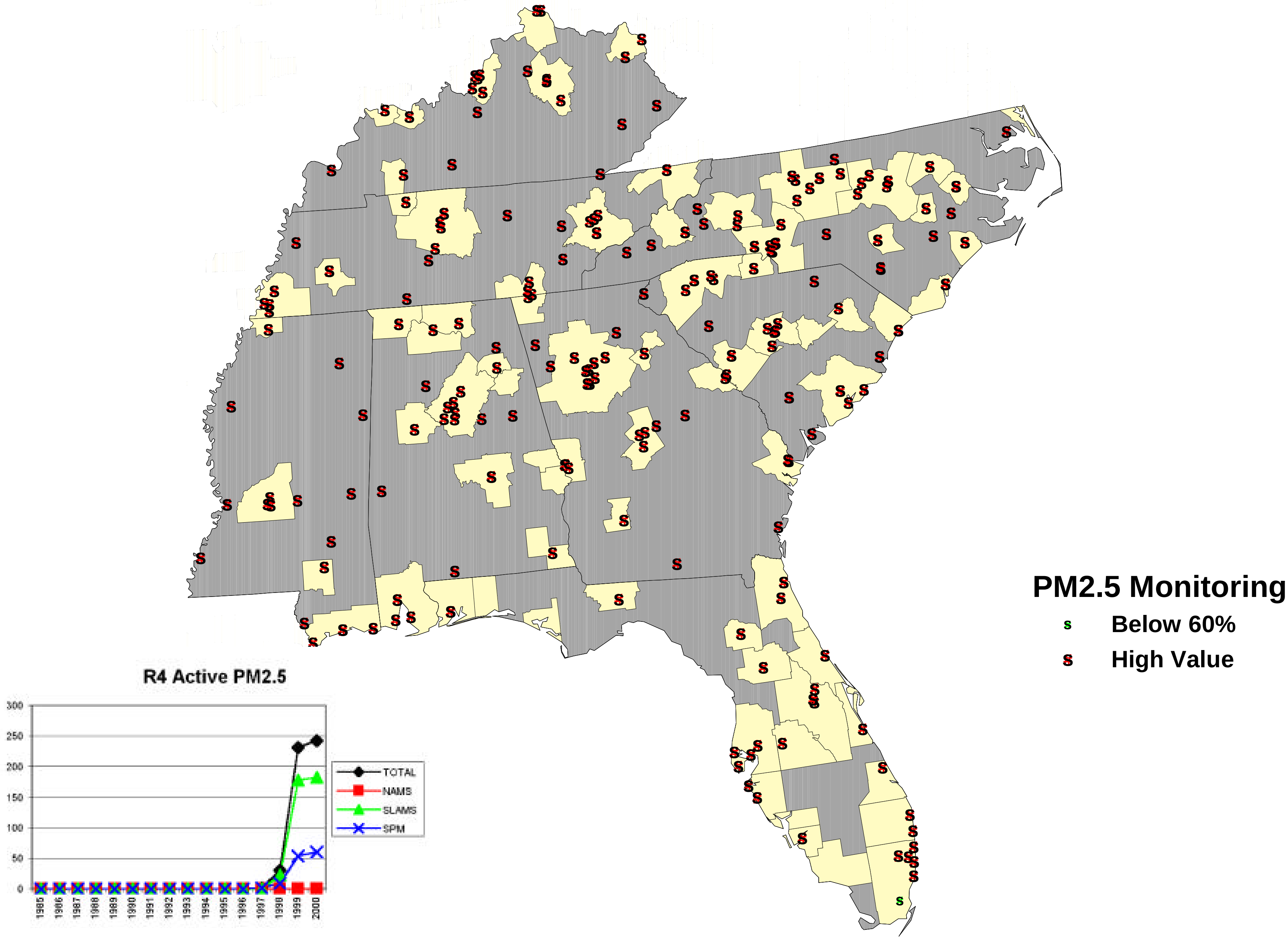
Pb Monitoring

S Non-required monitors Below 60% NAAQS

Site data gathered from old AIRS AMP380 report. Point data indicates monitors operated, not sites operated; therefore collocated monitor records also exist.
Concentration data gathered from New AIRS-AQS AMP450 report. Historic trends graphic complied from old ARIS-AQS AMP380 workfile.

PM2.5 Monitors Active during CY 2000

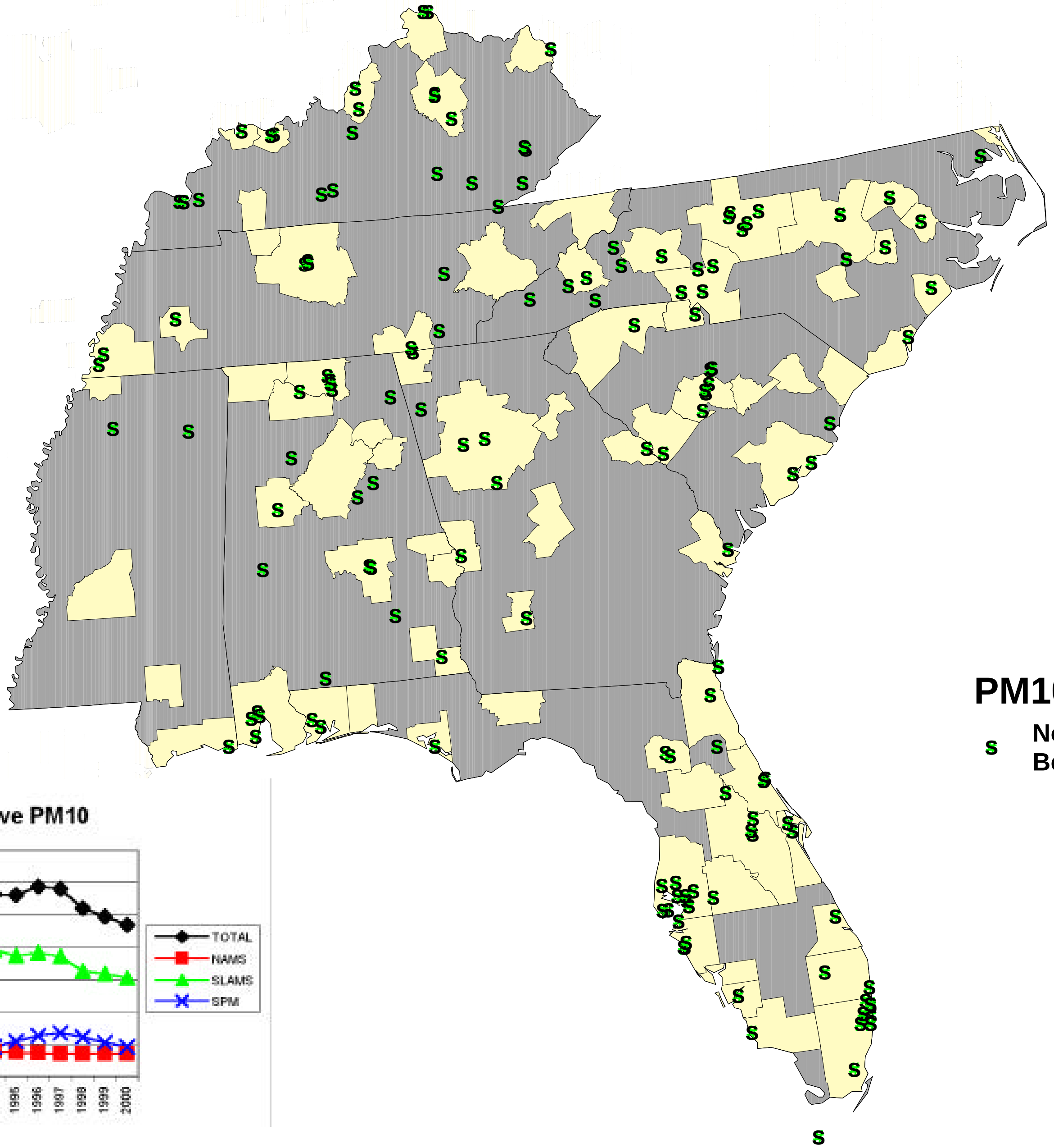
operated by Region 4 Agencies



Site data gathered from old AIRS AMP380 report. Point data indicates monitors operated, not sites operated; therefore collocated monitor records also exist.
Concentration data gathered from New AIRS-AQS AMP450 report. Historic trends graphic complied from old ARIS-AOS AMP380 workfile.

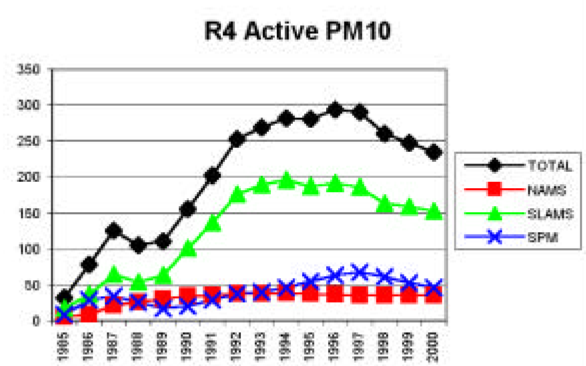
Non Required PM10 Monitors Active (CY 00)

operated by Region 4 Agencies



PM10 Monitoring

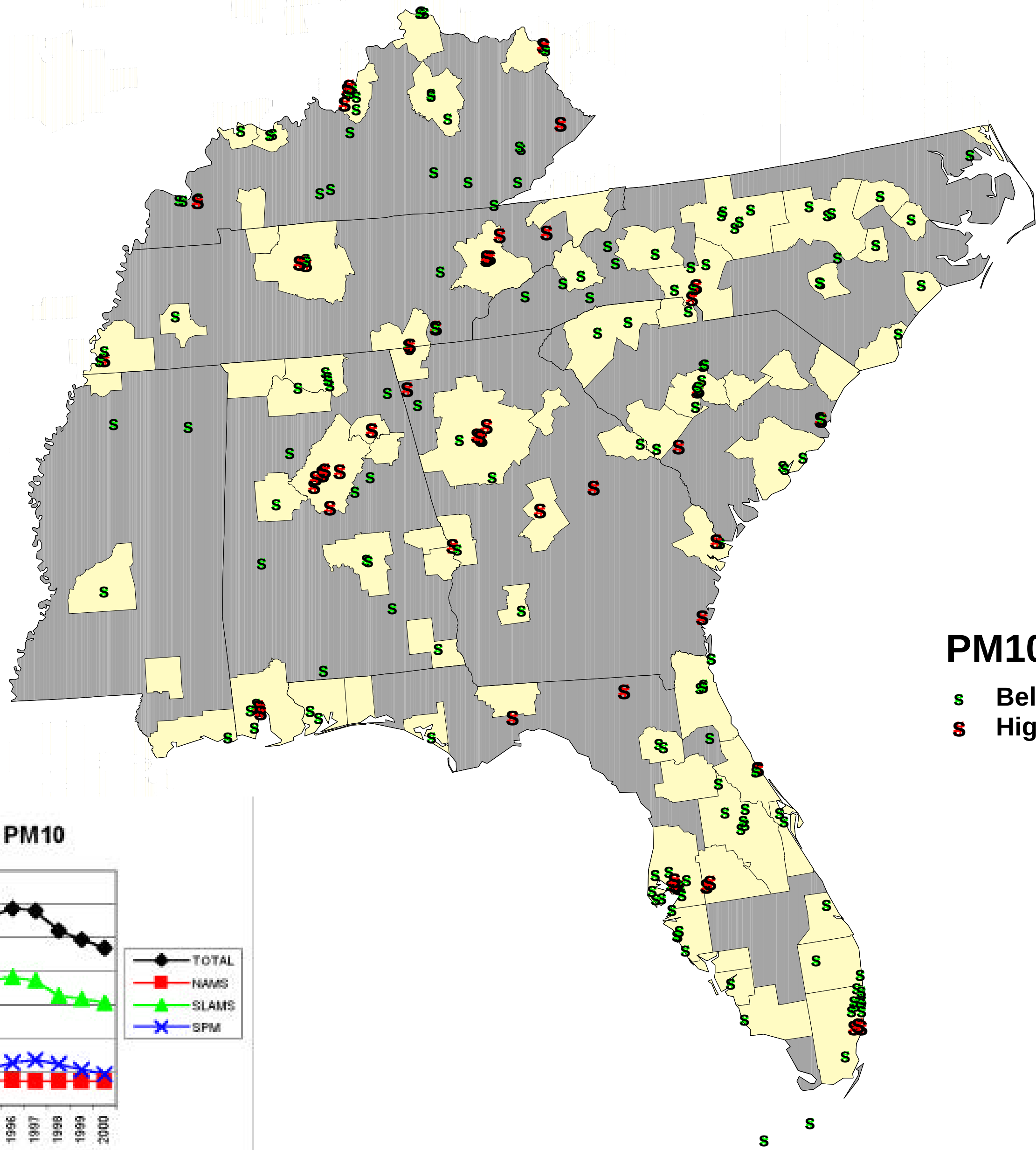
S Non-required monitors Below 60% NAAQS



Site data gathered from old AIRS AMP380 report. Point data indicates monitors operated, not sites operated; therefore collocated monitor records also exist.
Concentration data gathered from New AIRS-AOS AMP450 report. Historic trends graphic complied from old ARIS-AOS AMP380 workfile.

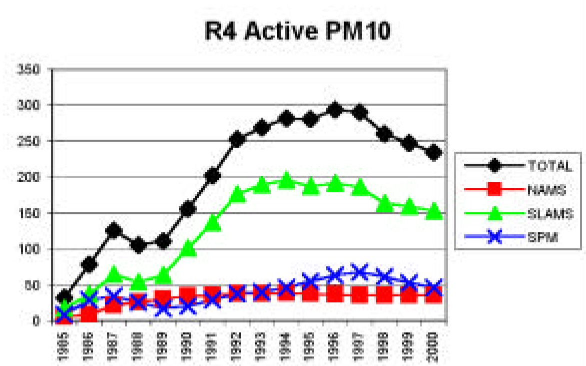
PM10 Monitors Active (CY 00)

operated by Region 4 Agencies



PM10 Monitoring

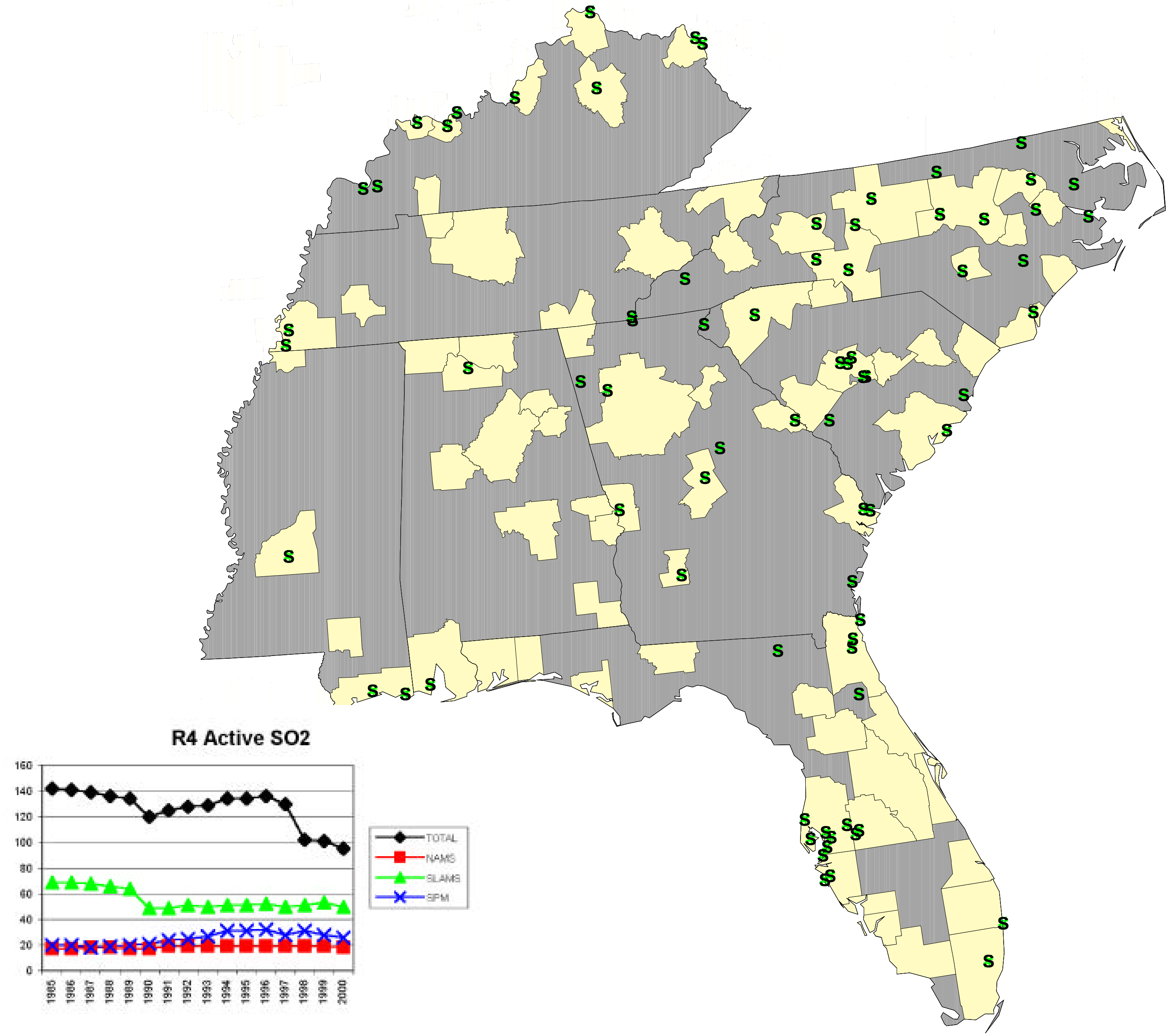
- S Below 60% NAAQS
- S High Value



Site data gathered from old AIRS AMP380 report. Point data indicates monitors operated, not sites operated; therefore collocated monitor records also exist.
Concentration data gathered from New AIRS-AOS AMP450 report. Historic trends graphic complied from old ARIS-AOS AMP380 workfile.

Non Required SO2 Monitors Active during CY 2000

operated by Region 4 Agencies



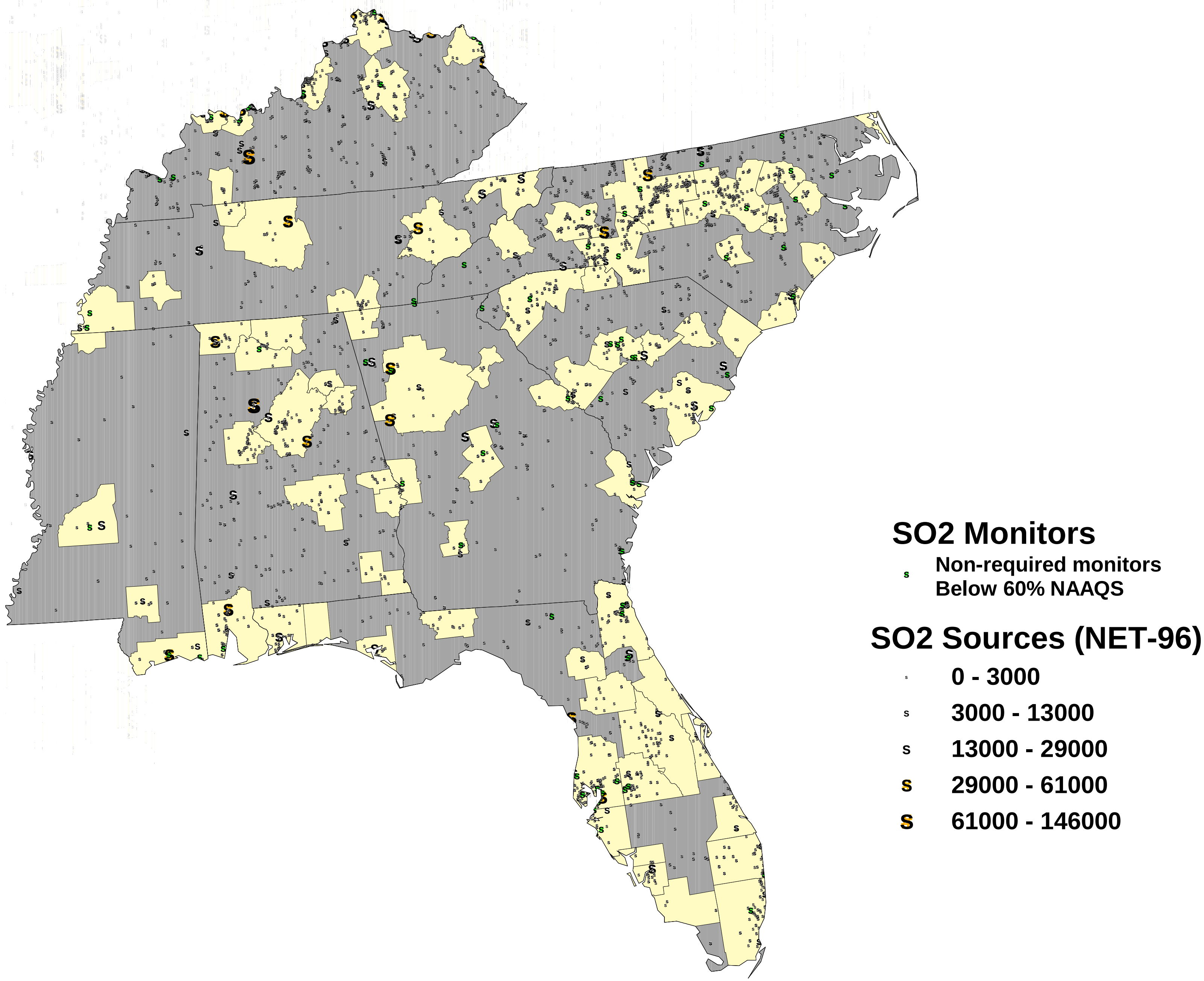
SO2 Monitoring

S Non-required monitors Below 60% NAAQS

Site data gathered from old AIRS AMP380 report. Point data indicates monitors operated, not sites operated; therefore collocated monitor records also exist.
Concentration data gathered from New AIRS-AQS AMP450 report. Historic trends graphic complied from old ARIS-AQS AMP380 workfile.

Non Required SO2 Monitors Active during CY 2000

monitors operated by Region 4 Agencies overlaid on SO2 Sources



Site data gathered from old AIRS AMP380 report. Point data indicates monitors operated, not sites operated; therefore collocated monitor records also exist.
Concentration data gathered from New AIRS-AQS AMP450 report. SO2 source emissions from NET-96.

CO Monitors Eligible to be Terminated

based on monitors active during CY 2000; Multi Param Analysis is based on 2002 data

Keeping Monitor (+1 / 0 / -1)	Keeping Monitor (Y/N)	Reason for Keeping Monitor	Monitor Information					
			SITE_ID	M_Param	PARAM	POC	MON_TYPE	REP_ORG
-1	**N**	REDUCTION IN OZONE PRECURSOR MONITORING (OPM)	371590022	3	42101	1	3	001
1	**Y**	SEASONAL ONLY- OZONE PRECURSOR MONITOR (OPM)	371830015	5	42101	1	3	001
1	**Y**	May be moved to Cape Romain to support visibility monitoring efforts	450190005	1	42101	1	2	001
1	**Y**	Prefer to maintain in the major metro areas not subject to regular seabreezes	450790020	1	42101	1	2	001
1	**Y**	Compliance Determination	471570034	2	42101	1	2	002

TN's comments entered in from correcpondance

Pb Monitors Eligible to be Terminated

based on monitors active during CY 2000; Multi Param Analysis is based on 2002 data

Keeping Monitor (+1 / 0 / -1)	Keeping Monitor (Y/N)	Reason for Keeping Monitor	Monitor Information					
			SITE_ID	M_Param	PARAM	POC	MON_TYPE	REP_ORG
1	Y	Located near secondary lead smelter	011090003	2	12128	1	2	011
1	Y	Located near secondary lead smelter	011090006	1	12128	1	3	011
-1	N	0	120115005	2	12128	1	2	017
1	Y	Source oriented for facility known to violate lead standard	120571073	1	12128	1	3	012
-1	N	0	120571074	1	12128	1	3	012
1	Y	Source oriented for incinerator	121033005	1	12128	1	2	013
1	Y	This site is near a secondary lead smelting facility	132150010	1	12128	1	2	010
1	Y	This site is near a secondary lead smelting facility	132150011	3	12128	1	2	010
1	Yes	State TSP network	450031001	1	12128	1	3	001
1	Yes	State TSP network	450130007	2	12128	1	3	001
1	Yes	State TSP network	450190003	4	12128	2	2	001
1	Yes	State TSP network	450190046	5	12128	1	3	001
1	Yes	Local Metals sources- evaluating for network reduction	450190047	2	12128	1	3	001
1	Yes	State TSP network- evaluating for network reduction	450330001	#N/A	12128	1	3	001
1	Yes	State TSP network	450410001	1	12128	1	3	001
1	Yes	TSP concerns and local lead source	450430002	2	12128	1	3	001
1	Yes	TSP concerns and local lead source	450430006	3	12128	1	3	001
1	Yes	TSP concerns and local lead source	450430007	1	12128	1	3	001
1	Yes	Local Lead surce	450430009	3	12128	1	2	001
1	Yes	State TSP network	450450008	5	12128	1	2	001
1	Yes	State TSP network	450450008	5	12128	2	3	001
1	Yes	State TSP network	450452002	1	12128	1	2	001
1	Yes	Lead source background	450470001	1	12128	1	3	001
1	Yes	Downwind from Lead Source	450470002	1	12128	1	3	001
-1	N	0	450490001	1	12128	2	3	001
1	Yes	State TSP network	450510002	2	12128	2	3	001
1	Yes	State TSP network- evaluating for network reduction	450550001	#N/A	12128	2	3	001
1	Yes	State TSP network- evaluating for network reduction	450590001	1	12128	2	3	001
1	Yes	State TSP network- evaluating for network reduction	450630005	2	12128	2	3	001
1	Yes	State TSP network- PM10 surrogate	450631002	1	12128	2	3	001
1	Yes	State TSP network	450790006	1	12128	2	2	001
1	Yes	State TSP network	450790006	1	12128	4	3	001
1	Yes	State TSP network	450790007	6	12128	2	3	001
-1	N	Currently doing concurrent sampling at Bates in prep for shutdown Q4 02	450790014	1	12128	1	3	001

Pb Monitors Eligible to be Terminated

based on monitors active during CY 2000; Multi Param Analysis is based on 2002 data

Keeping Monitor (+1 / 0 / -1)	Keeping Monitor (Y/N)	Reason for Keeping Monitor	Monitor Information					
			SITE_ID	M_Param	PARAM	POC	MON_TYPE	REP_ORG
1	Yes	State TSP network	450790021	4	12128	1	3	001
-1	N	Discontinued '01	450791006	#N/A	12128	2	3	001
1	Yes	State TSP network	450830001	2	12128	2	3	001
1	Yes	State TSP network	450850001	1	12128	1	3	001
1	Yes	State TSP network	450910005	2	12128	1	3	001
1	Y	Supplement Air Toxics Study	470930027	1	12128	1	2	004
1	Y	Supplement Air Toxics Study and POC 2	470930027	1	12128	2	3	004
1	Y	Supplement Air Toxics Study	470931017	3	12128	1	3	004
1	Y	Compliance Determination	471633002	#N/A	12128	3	2	001

TN's comments entered in from correcpondance

NO2 Monitors Eligible to be Terminated

based on monitors active during CY 2000; Multi Param Analysis is based on 2002 data

Keeping Monitor (+1 / 0 / -1)	Keeping Monitor (Y/N)	Reason for Keeping Monitor	Monitor Information					
			SITE_ID	M_Param	PARAM	POC	MON_TYPE	REP_ORG
-1	N	Monitor has been shut down	011170004	2	42602	1	3	011
1	Y	Collocated with ozone for gaseous interaction information	120110031	2	42602	1	2	017
1	Y	To exaimine ozone interaction	120310032	3	42602	2	2	011
1	Y	To exaimine ozone interaction	120330004	5	42602	1	3	001
1	Y	To exaimine ozone interaction	120570081	3	42602	1	3	012
1	Y	To exaimine ozone interaction	120814012	3	42602	1	2	014
1	Y	To exaimine ozone interaction	120952002	6	42602	1	2	020
1	Y	To exaimine ozone interaction	120991004	3	42602	1	2	016
1	Y	To exaimine ozone interaction	121111002	3	42602	1	3	006
1	Y	To exaimine ozone interaction	121151006	4	42602	1	2	015
1	Y	This is a PAMS site and we will continue monitoring	130893001	3	42602	1	3	010
1	Y	This is a PAMS site and we will continue monitoring	132230003	3	42602	1	3	010
1	Y	This is a PAMS site and we will continue monitoring	132470001	3	42602	1	3	010
1	Yes	Track ozone precursor	210190015	#N/A	42602	1	2	001
1	Yes	Track ozone precursor	210290006	4	42602	1	3	001
1	Yes	Track ozone precursor	210370003	5	42602	1	2	001
1	Yes	Track ozone precursor	210590005	4	42602	1	2	001
1	Yes	Track ozone precursor	210670012	6	42602	1	2	001
1	Yes	Track ozone precursor	211010013	4	42602	1	2	001
-1	N	0	211110051	6	42602	1	2	002
1	Y	Population Exposure	211111021	2	42602	2	2	002
1	Yes	Track ozone precursor	211170007	4	42602	2	3	001
1	Yes	Track ozone precursor	211451024	4	42602	1	2	001
1	Yes	Track ozone precursor	212270008	4	42602	1	3	001
1	Y?	(comment was '?') Collects background PSD data for industry modeling purposes	280330002	3	42602	2	3	100
1	Y	Collects background PSD data for industry modeling purposes	280450001	3	42602	1	3	100
1	Y	Provides support information for O3/PM forecasting. Will discontinue at first sign of reso	370670022	7	42602	1	2	002
1	Y	Neighborhood scale for Charlotte.	371190041	6	42602	1	2	003
1	Yes	One of Barnwell/Aiken pair being considered for shutdown.	450030003	3	42602	2	4	001
1	Yes	One of Barnwell/Aiken pair being considered for shutdown.	450110001	4	42602	2	4	001
1	Yes	Coastal industrial area	450190003	4	42602	2	2	001
1	Yes	Impact on Class one Area- visibility monitoring support- may replace with Noy	450190046	5	42602	1	2	001
1	Yes	Upstate large urban area	450450008	5	42602	1	2	001
-1	N	Discontinued	450450009	1	42602	1	3	001

NO2 Monitors Eligible to be Terminated

based on monitors active during CY 2000; Multi Param Analysis is based on 2002 data

Keeping Monitor (+1 / 0 / -1)	Keeping Monitor (Y/N)	Reason for Keeping Monitor	Monitor Information					
			SITE_ID	M_Param	PARAM	POC	MON_TYPE	REP_ORG
1	Yes	Long term trend - edge urban area- training site	450790007	6	42602	1	2	001
1	Yes	Agreement for monitoring of Class 2 area	450790021	4	42602	1	3	001
-1	N	Discontinued '01	450791006	#N/A	42602	2	3	001
1	Y	New Source Review	470370011	4	42602	1	2	003
1	Y	New Source Review	471570024	3	42602	1	2	002

TN's comments entered in from correcpondance

PM10 Monitors Eligible to be Terminated

based on monitors active during CY 2000; Multi Param Analysis is based on 2002 data

Keeping Monitor (+1 / 0 / -1)	Keeping Monitor (Y/N)	Reason for Keeping Monitor	Monitor Information					
			SITE_ID	M_Param	PARAM	POC	MON_TYPE	REP_ORG
-1	N	Lost access to site - already closed	010491002	1	81102	1	2	011
1	Y	near industry with potential ambient impact - Limited monitoring in area	010530002	2	81102	1	2	011
1	Y	near industry with potential ambient impact - Limited monitoring in area	010690002	2	81102	1	2	011
1	Y	source oriented site	010890002	1	81102	1	2	014
1	Y	spm	010890003	1	81102	2	3	014
1	Y	trends and source oriented site	010890004	1	81102	1	2	014
1	Y	trends and co-located	010890014	3	81102	1	2	014
1	Y	near industry with potential ambient impact - Limited monitoring in area	010910003	1	81102	1	2	011
-1	N	0	010970002	2	81102	1	2	011
1	Y	near industry with potential ambient impact - Limited monitoring in area	010970016	1	81102	3	2	011
-1	N	Lost access due to security concerns - already closed	010970031	1	81102	1	3	011
1	Y	near industry with potential ambient impact - Limited monitoring in area	010972005	4	81102	1	3	011
-1	N	0	011010007	2	81102	1	2	011
1	Y	near industry with potential ambient impact - Limited monitoring in area	011011002	4	81102	1	2	011
-1	N	0	011030010	#N/A	81102	1	2	011
1	Y	near industry with potential ambient impact - Limited monitoring in area	011090003	2	81102	1	2	011
1	Y	near industry with potential ambient impact - Limited monitoring in area	011210002	2	81102	1	2	011
1	Y	near industry with potential ambient impact - Limited monitoring in area	011211002	1	81102	1	2	011
1	Y	near industry with potential ambient impact - Limited monitoring in area	011250003	1	81102	1	2	011
-1	N	Jasper site relocated - did not restart monitor	011270002	1	81102	1	2	011
1	Y	Continuous for AQI for population of 217,955	120010023	2	81102	1	2	002
-1	N	0	120011003	#N/A	81102	1	2	002
1	Y	Collocated with PM2.5 FRM	120051004	2	81102	1	2	001
1	Y	Continuous for AQI for population of 476,230	120090004	1	81102	1	2	003
-1	N	0	120093001	#N/A	81102	1	2	003
-1	N	0	120110011	1	81102	1	2	017
1	Y	Collocated with PM2.5 FRM and continuous	120111002	2	81102	1	2	017
1	Y	Will be replaced with TEOM.	120112004	3	81102	1	2	017
1	Y	Will be replaced with TEOM	120113002	3	81102	1	2	017
-1	N	0	120115002	1	81102	1	2	017
1	Y	Source oriented, keep for compliance	120115005	2	81102	1	2	017
-1	N	0	120116002	1	81102	1	2	017
-1	N	0	120117002	#N/A	81102	1	2	017
-1	N	0	120210003	1	81102	1	2	005

PM10 Monitors Eligible to be Terminated

based on monitors active during CY 2000; Multi Param Analysis is based on 2002 data

Keeping Monitor (+1 / 0 / -1)	Keeping Monitor (Y/N)	Reason for Keeping Monitor	Monitor Information					
			SITE_ID	M_Param	PARAM	POC	MON_TYPE	REP_ORG
1	Y	Southern most site, collocated with PM 2.5 FRM	120256001	2	81102	1	2	018
1	Y	To maintain record of changes in that part of the city	120310089	1	81102	1	2	011
1	Y	Source oriented, keep for compliance	120330003	1	81102	1	2	001
1	Y	Collocated with PM2.5 FRM and multi-pollutant site	120330004	5	81102	1	2	001
1	Y	Collocated with PM2.5 FRM and 2.5 speciation site	120570030	2	81102	1	3	012
1	Y	Source oriented, keep for compliance	120570083	1	81102	1	3	012
1	Y	Source oriented, keep for compliance	120570085	1	81102	1	3	012
1	Y	Multi-pollutant site	120570095	2	81102	1	2	012
1	Y	To maintain record of changes in that part of the city	120571068	1	81102	1	2	012
1	Y	To maintain record of changes in that part of the city	120572002	1	81102	1	3	012
1	Y	National Forestry site for fire particulate impact information	120690001	1	81102	1	3	003
1	Y	Collocated with PM2.5 FRM	120710005	2	81102	1	2	005
1	Y	Only PM10 in county with population of 264,002 and MSA > 500,000	120810008	1	81102	1	2	014
-1	N	0	120871002	1	81102	1	3	005
-1	N	0	120872002	1	81102	1	2	005
-1	N	0	120890005	2	81102	1	2	002
-1	N	0	120890005	2	81102	3	2	002
1	Y	Collocated with PM2.5 FRM	120951004	2	81102	1	2	020
1	Y	Multi-pollutant site	120952002	6	81102	1	2	020
1	Y	Multi-pollutant site	120990008	2	81102	1	2	016
-1	N	0	120992003	#N/A	81102	1	2	016
1	Y	To maintain record of changes in that part of the city	121030012	1	81102	1	2	013
1	Y	Multi-pollutant site	121030018	5	81102	1	2	013
1	Y	Multi-pollutant site	121035002	3	81102	1	2	013
1	Y	Multi-pollutant site	121050010	2	81102	1	2	004
1	Y	Multi-pollutant site	121071008	2	81102	1	2	002
-1	N	0	121110012	1	81102	1	2	006
1	Y	Collocated with PM2.5 FRM	121150013	2	81102	1	2	015
1	Y	?	121151003	1	81102	1	2	015
1	Y	Multi-pollutant site	121151006	4	81102	1	2	015
1	Y	Multi-pollutant site	121171002	3	81102	1	3	003
1	Y	Multi-pollutant site	121275002	3	81102	1	2	003
-1	N	0	121275003	#N/A	81102	1	2	003
1	Y	Community Interest	130510014	1	81102	1	2	010

PM10 Monitors Eligible to be Terminated

based on monitors active during CY 2000; Multi Param Analysis is based on 2002 data

Keeping Monitor (+1 / 0 / -1)	Keeping Monitor (Y/N)	Reason for Keeping Monitor	Monitor Information					
			SITE_ID	M_Param	PARAM	POC	MON_TYPE	REP_ORG
1	Y	Co-located with PM 2.5. Useful in PM Coarse monitoring	130950007	2	81102	1	2	010
-1	N	Monitor has always measured low concentrations	130970003	1	81102	2	3	010
1	Y	Co-located with PM 2.5. Useful in PM Coarse monitoring	131150005	2	81102	1	2	010
1	Y	Co-located with PM 2.5. Useful in PM Coarse monitoring	131210032	#N/A	81102	1	2	010
1	Y	Co-located with PM 2.5. Useful in PM Coarse monitoring	132150011	3	81102	1	2	010
1	Y	Co-located with PM 2.5. Useful in PM Coarse monitoring	132450091	3	81102	1	2	010
-1	N	Monitor has always measured low concentrations	132550002	1	81102	1	3	010
1	Y	Co-located with PM 2.5. Useful in PM Coarse monitoring	132950002	2	81102	1	2	010
1	Yes	Population	210130002	3	81102	1	3	001
1	Yes	Population	210192001	1	81102	1	2	001
1	Yes	Population	210290006	4	81102	1	2	001
1	Yes	Population	210370003	5	81102	1	2	001
1	Yes	Population	210590005	4	81102	1	2	001
1	Yes	Population (relocated to 21-059-0014, 1/2001)	210591001	#N/A	81102	1	2	001
1	Yes	Population	210670012	6	81102	1	2	001
1	Yes	Population	210670014	2	81102	1	2	001
1	Yes	Population	210930006	3	81102	1	2	001
1	Yes	Population	210950003	1	81102	1	2	001
1	Yes	Population	211010013	4	81102	1	2	001
-1	N	0	211110048	2	81102	1	2	002
1	Yes	Population	211170007	4	81102	1	2	001
1	Yes	Population	211250004	2	81102	1	3	001
1	Yes	Source	211390004	2	81102	1	2	001
1	Yes	Population	211451004	2	81102	1	2	001
1	Yes	Population	211451024	4	81102	1	2	001
1	Yes	Population	211510003	2	81102	1	2	001
-1	No	Sampler relocated to site 21-193-0003	211930001	#N/A	81102	1	2	001
1	Yes	Population	211930003	3	81102	1	2	001
1	Yes	Population	211990003	2	81102	1	3	001
-1	No	Terminated 3/2001	212270004	#N/A	81102	1	2	001
1	Yes	Population	212270008	4	81102	1	2	001
-1	No	Relocated to 21-125-0004 4/2002	212350002	1	81102	1	2	001
1	Y?	(Comment was '?') Collects data for industry modeling purposes/PM10 sta	280590006	4	81102	1	2	100
1	Y?	(Comment was '?') Collects data for industry modeling purposes/PM10 sta	280810005	3	81102	1	2	100

PM10 Monitors Eligible to be Terminated

based on monitors active during CY 2000; Multi Param Analysis is based on 2002 data

Keeping Monitor (+1 / 0 / -1)	Keeping Monitor (Y/N)	Reason for Keeping Monitor	Monitor Information					
			SITE_ID	M_Param	PARAM	POC	MON_TYPE	REP_ORG
0	0	0	281070001	#N/A	81102	1	3	100
-1	N	0	370210003	1	81102	1	2	004
-1	N	0	370250004	2	81102	1	2	001
1	Y	State PM-10 modeling needs	370350004	2	81102	1	2	001
-1	N	0	370571002	#N/A	81102	1	2	001
-1	N	0	370650003	2	81102	1	2	001
1	Y	TEOM colocated with PM2.5 FRM, PM2.5 TEOM, and speciation. Excelle	370670022	7	81102	1	2	002
1	Y	Provides PM10 backup for Hattie Avenue. Monitor is 9 years old…will prol	370670023	2	81102	2	2	002
-1	N	0	370710016	2	81102	1	3	001
1	Y	This will become a PM-10 precision site at Mendenahall - 37-081-0013	370810009	2	81102	1	2	001
-1	N	0	370811005	#N/A	81102	1	2	001
-1	N	0	370850001	#N/A	81102	1	2	001
-1	N	0	370870002	#N/A	81102	1	2	001
1	Y	0	370891006	1	81102	1	2	001
-1	N	0	371110004	2	81102	1	2	001
-1	N	Terminated 12/01.	371190001	1	81102	1	3	003
-1	N	Terminated 12/01.	371191001	1	81102	1	2	003
-1	N	0	371210001	2	81102	1	2	001
-1	N	0	371290009	2	81102	1	2	001
1	Y	State PM-10 modeling needs	371330005	2	81102	1	2	001
-1	N	0	371390002	2	81102	1	2	001
-1	N	0	371470005	2	81102	1	2	001
1	Y	State PM-10 modeling needs	371730002	4	81102	1	3	001
1	Y	State PM-10 modeling needs	371830014	4	81102	1	3	001
1	Y	State PM-10 modeling needs	371830014	4	81102	4	2	001
1	Y	State PM-10 modeling needs - only 1 of the 2 monitors will be kept	371910005	2	81102	1	2	001
1	Yes	One of Barnwell/Aiken pair being considered for shutdown.	450030003	3	81102	1	2	001
1	Yes	Impact on Class one Area- visibility monitoring support	450190046	5	81102	1	2	001
1	Yes	Industrial development impact	450190047	2	81102	1	2	001
-1	N	Discontinued	450398001	#N/A	81102	1	3	001
-1	N	Discontinued	450398002	#N/A	81102	1	3	001
1	Yes	Area Particulate concerns	450430009	3	81102	1	3	001
1	Yes	Rural/Agricultural site	450630005	2	81102	3	3	001
1	Yes	Colocated with PM2.5	450790007	6	81102	2	2	001

PM10 Monitors Eligible to be Terminated

based on monitors active during CY 2000; Multi Param Analysis is based on 2002 data

Keeping Monitor (+1 / 0 / -1)	Keeping Monitor (Y/N)	Reason for Keeping Monitor	Monitor Information					
			SITE_ID	M_Param	PARAM	POC	MON_TYPE	REP_ORG
1	**Yes**	Colocated with PM2.5	450790007	6	81102	3	3	001
1	**Yes**	Colocated with PM2.5	450790019	3	81102	1	2	001
1	**Yes**	Midlands urban area	450791003	2	81102	1	2	001
1	**Yes**	Upstate urban area	450830001	2	81102	1	2	001
1	**Yes**	Cnsidering for shutdown	450910005	2	81102	1	2	001
1	**Y**	New Source Review	470111002	1	81102	2	3	001
1	**Y**	Historical Data	470370006	1	81102	2	3	003
1	**Y**	Supplement Air Toxics Study	470370011	4	81102	1	2	003
1	**Y**	Collacated with PM2.5	470370023	2	81102	1	2	003
1	**Y**	Compliance and Historical Data	470650006	1	81102	1	2	005
1	**Y**	Compliance and New Source Review	471130003	1	81102	1	3	001
1	**Y**	Compliance	471450104	1	81102	1	3	001
1	**Y**	New Source Review and Historical Data	471570024	3	81102	1	2	002
1	**Y**	Compliance and New Source Review	471570046	2	81102	1	2	002

TN's comments entered in from correcpondance

SO2 Monitors Eligible to be Terminated

based on monitors active during CY 2000; Multi Param Analysis is based on 2002 data

Keeping Monitor (+1 / 0 / -1)	Keeping Monitor (Y/N)	Reason for Keeping Monitor	Monitor Information					
			SITE_ID	M_Param	PARAM	POC	MON_TYPE	REP_ORG
-1	N	0	010790003	1	42401	1	3	011
1	Y	Near sources with potential to emit SO2 - will continue to operate as special purpose mo	010972005	4	42401	1	2	011
1	Y	Required by population	120250019	1	42401	1	2	018
1	Y	Historically experiences intermittent elevated values	120310080	2	42401	1	2	011
1	Y	Historically experiences intermittent elevated values	120310081	1	42401	1	2	011
1	Y	Historically experiences intermittent elevated values	120470015	2	42401	1	2	002
1	Y	Multi-pollutant site	120570081	3	42401	1	2	012
1	Y	Historically experiences intermittent elevated values	120570109	1	42401	1	2	012
1	Y	Multi-pollutant site	120571035	3	42401	1	2	012
1	Y	Multi-pollutant site	120574004	3	42401	1	3	012
1	Y	Multi-pollutant site	120813002	2	42401	1	2	014
1	Y	Historically experiences intermittent elevated values	120890005	2	42401	1	2	002
1	Y	Required by population	120993004	1	42401	1	2	016
1	Y	Sited for concern for resource recovery facility	121033002	1	42401	1	3	013
1	Y	Multi-pollutant site	121035003	1	42401	1	2	013
1	Y	Historically experiences intermittent elevated values	121050010	2	42401	1	2	004
1	Y	Historically experiences intermittent elevated values	121052006	2	42401	1	2	004
1	Y	Historically experiences intermittent elevated values	121071008	2	42401	1	2	002
-1	N	0	121151005	2	42401	1	2	015
1	Y	Multi-pollutant site	121151006	4	42401	1	2	015
1	Y	Multiple pollutants measured at this site	130090001	1	42401	1	2	010
-1	N	Bad location and low concentrations.	130150002	1	42401	1	2	010
1	Y	Population Exposure	130210012	3	42401	1	2	010
-1	N	This monitor will be reloacted to better nearby existing site, but due to public interest two	130510019	1	42401	1	2	010
1	Y	Population Exposure	130510021	2	42401	1	2	010
-1	N	Monitor has always measured low concentrations and only operates 1 in 3 years.	130950006	1	42401	1	2	010
1	Y	Occasional SO2 spikes	131110091	1	42401	1	2	010
1	Y	Population Exposure	131150003	1	42401	1	2	010
1	Y	Population Exposure	131270006	3	42401	5	3	010
1	Y	Population Exposure	132150008	2	42401	5	3	010
1	Y	Population Exposure	132450003	1	42401	1	2	010
1	Yes	Population	210190015	#N/A	42401	1	2	001
1	Yes	Population	210370003	5	42401	1	2	001
1	Yes	Population	210590005	4	42401	1	2	001

SO2 Monitors Eligible to be Terminated

based on monitors active during CY 2000; Multi Param Analysis is based on 2002 data

Keeping Monitor (+1 / 0 / -1)	Keeping Monitor (Y/N)	Reason for Keeping Monitor	Monitor Information					
			SITE_ID	M_Param	PARAM	POC	MON_TYPE	REP_ORG
1	Yes	Population	210670012	6	42401	1	2	001
1	Yes	Source	210890007	2	42401	1	3	001
1	Yes	Source	210910012	2	42401	1	3	001
1	Yes	Population	211010013	4	42401	1	2	001
1	Y	attempting to switch to NAMS desigantion	211110051	6	42401	1	2	002
1	Yes	Source	211390004	2	42401	1	2	001
1	Yes	Population	211451024	4	42401	1	2	001
1	Y?	(Comment was '?') Near a coal fired power plant	280470007	1	42401	1	2	100
1	Y	Opersted historically due to oil/gas fields SE of the city	280490018	3	42401	1	2	100
1	Y	Operated due to Chevron refinery and other SO2 sources	280590006	4	42401	1	2	100
1	Y	AREA PSD MONITORING - OPERATIONAL EVERY 9TH YEAR	370030003	2	42401	1	3	001
1	Y	SPM - AREA SOURCE MONITOIRNG	370130003	#N/A	42401	1	2	001
1	Y	AREA PSD MONITORING - OPERATIONAL EVERY 9TH YEAR	370370004	4	42401	1	3	001
1	Y	AREA PSD MONITORING - OPERATIONAL EVERY 9TH YEAR	370511003	2	42401	1	3	001
1	Y	AREA PSD MONITORING - OPERATIONAL EVERY 9TH YEAR	370590002	2	42401	1	3	001
1	Y	AREA PSD MONITORING - OPERATIONAL EVERY 9TH YEAR	370610002	3	42401	1	3	001
1	Y	AREA PSD MONITORING - OPERATIONAL EVERY 9TH YEAR	370650099	2	42401	1	3	001
1	Y	Also reporting 5 minute SO2 under 42406. Will discontinue along with NOx at first sign c	370670022	7	42401	1	2	002
1	Y	AREA PSD MONITORING - OPERATIONAL EVERY 9TH YEAR	371010002	2	42401	1	3	001
1	Y	AREA PSD MONITORING - OPERATIONAL EVERY 9TH YEAR	371090004	3	42401	1	3	001
1	Y	AREA PSD MONITORING - OPERATIONAL EVERY 9TH YEAR	371170001	2	42401	1	3	001
1	Y	SPM for ozone precursor monitoring.	371190041	6	42401	1	2	003
1	Y	SPM - AREA SOURCE MONITOIRNG	371290006	1	42401	1	2	001
1	Y	AREA PSD MONITORING - OPERATIONAL EVERY 9TH YEAR	371310002	2	42401	1	3	001
1	Y	AREA PSD MONITORING - OPERATIONAL EVERY 9TH YEAR	371450003	2	42401	1	3	001
1	Y	AREA PSD MONITORING - OPERATIONAL EVERY 9TH YEAR	371470099	2	42401	1	3	001
1	Y	AREA PSD MONITORING - OPERATIONAL EVERY 3RD YEAR	371730002	4	42401	1	3	001
1	Yes	One of Barnwell/Aiken pair being considered for shutdown.	450110001	4	42401	2	4	001
1	Yes	Impact on Class one Area- visibility monitoring support	450190046	5	42401	2	2	001
1	Yes	Several local sources	450430006	3	42401	1	2	001
1	Yes	Upstate urban area	450450008	5	42401	1	2	001
1	Yes	Considering for shutdown	450630008	2	42401	1	3	001
1	Yes	Regional scale upstate site	450730001	3	42401	1	3	001
1	Yes	Urban area- training	450790007	6	42401	1	3	001

SO2 Monitors Eligible to be Terminated

based on monitors active during CY 2000; Multi Param Analysis is based on 2002 data

Keeping Monitor (+1 / 0 / -1)	Keeping Monitor (Y/N)	Reason for Keeping Monitor	Monitor Information					
			SITE_ID	M_Param	PARAM	POC	MON_TYPE	REP_ORG
1	**Yes**	Agreement for monitoring of Class 2 area	450790021	4	42401	1	3	001
1	**Yes**	Considering for shutdown	450791003	2	42401	1	2	001
-1	**N**	Discontinued '01	450791006	#N/A	42401	2	3	001
1	**Y**	Compliance Determination	471390003	1	42401	1	2	001
1	**Y**	Compliance Determination, New Source Review	471570034	2	42401	1	2	002
1	**Y**	Compliance Determination, New Source Review	471570046	2	42401	1	2	002

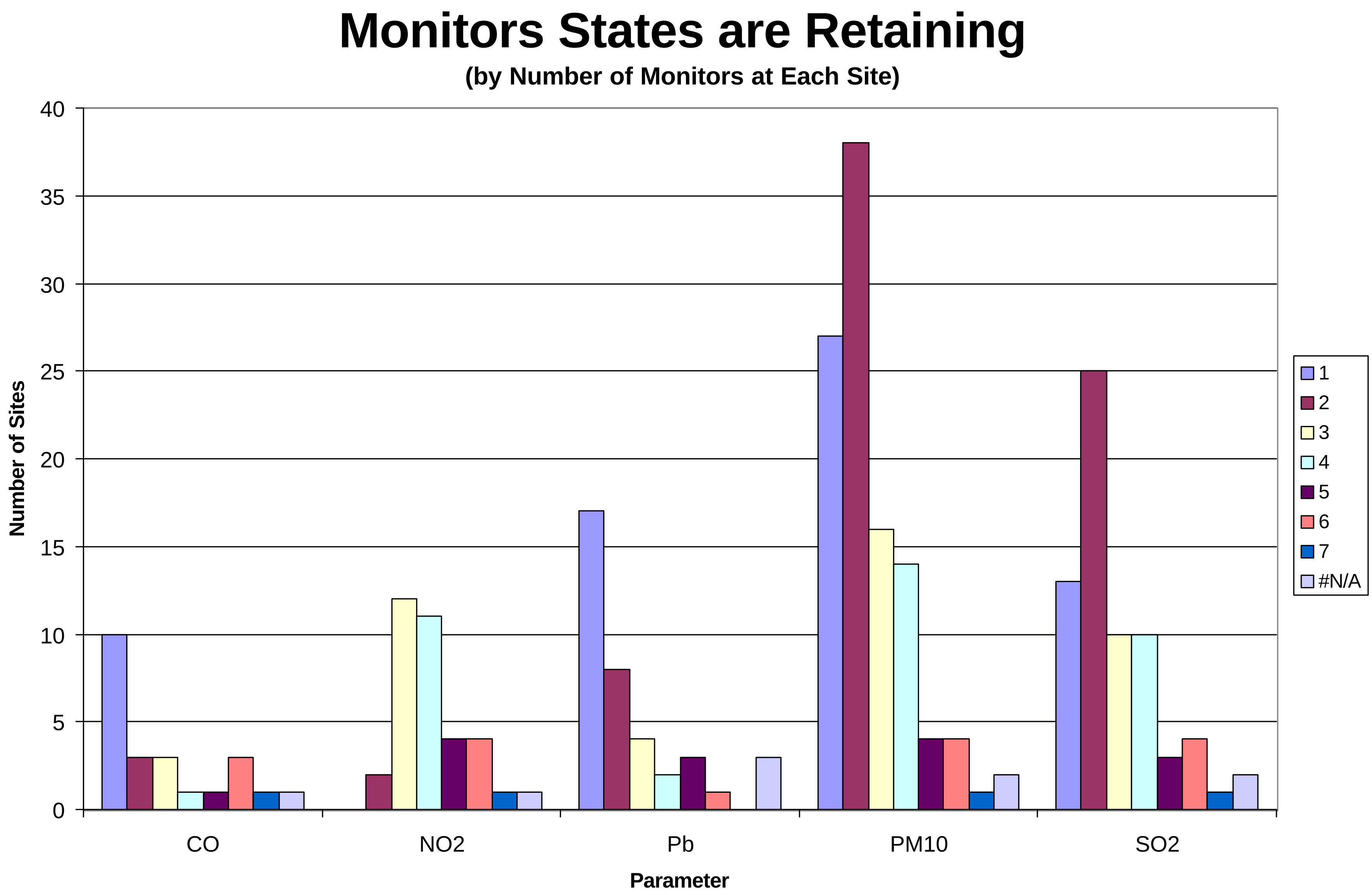
TN's comments entered in from correcpondance

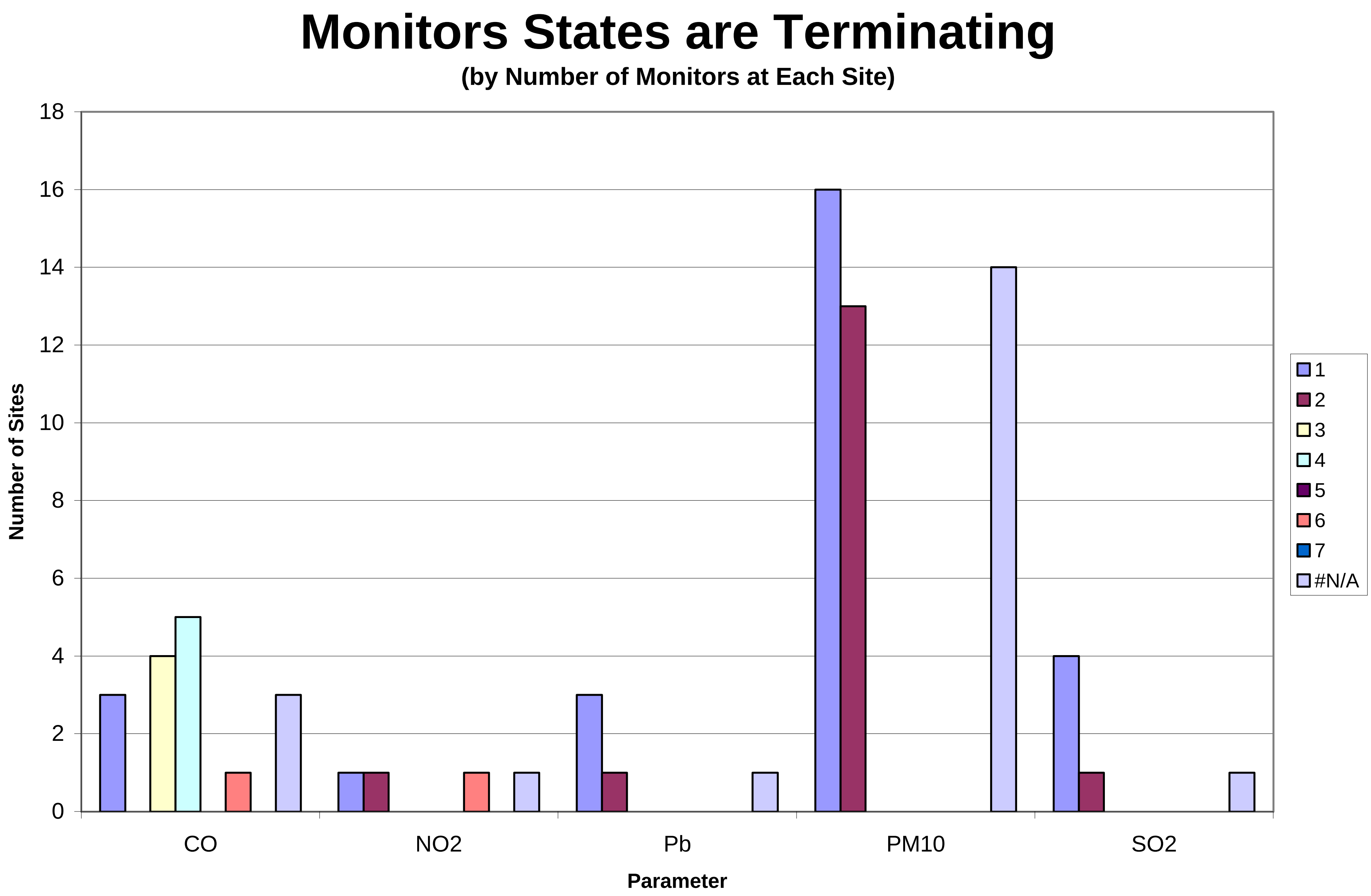
Appendix B-2

Assessment of Current Region 4 Network

Supporting documentation for Section IV. (B)

Multi-Parameter Analysis of Monitor Terminations for CO, Pb, $NO_{2,}$ PM_{10}, SO_2


Monitors States are Retaining
(by Number of Monitors at Each Site)
Number of Sites
Parameter
0
5
10
15
20
25
30
35
40
CO
NO2
Pb
PM10
SO2
1
2
3
4
5
6
7
#N/A


Monitors States are Terminating
(by Number of Monitors at Each Site)
Number of Sites
18
16
14
12
10
8
6
4
2
0
CO
NO2
Pb
PM10
SO2
Parameter
1
2
3
4
5
6
7
#N/A

AIRSSITE	AG_CODE	AGENCY_DES	M_Param	CO	O3	PB	PM10	PMFINE	SO2	NO2	NO	NOX	NOY	NOXcnt	NOYcnt	LAT	LONG
010030010	0013	AL DEPT OF ENV MGT	2		Y			Y						0	0	30.4978	-87.8814
010270001	0013	AL DEPT OF ENV MGT	2		Y			Y						0	0	33.2811	-85.8022
010331002	0013	AL DEPT OF ENV MGT	4		Y			Y	Y	Y				1	0	34.7606	-87.6506
010491002	0013	AL DEPT OF ENV MGT	1				Y							0	0	34.4561	-85.7072
010491003	0013	AL DEPT OF ENV MGT	1					Y						0	0	34.2875	-85.9683
010510001	0013	AL DEPT OF ENV MGT	1		Y									0	0	32.4983	-86.1367
010530002	0013	AL DEPT OF ENV MGT	2				Y	Y						0	0	31.1064	-87.0711
010550008	0013	AL DEPT OF ENV MGT	1				Y							0	0	34.0150	-86.0122
010550010	0013	AL DEPT OF ENV MGT	1					Y						0	0	33.9936	-85.9911
010550011	0013	AL DEPT OF ENV MGT	1		Y									0	0	33.9039	-86.0539
010690002	0013	AL DEPT OF ENV MGT	2				Y	Y						0	0	31.2286	-85.3756
010730002	0550	JEFFERSON COUNTY, AL DEPARTMENT OF HEALTH	1				Y							0	0	33.3975	-86.9553
010730023	0550	JEFFERSON COUNTY, AL DEPARTMENT OF HEALTH	2				Y	Y						0	0	33.5528	-86.8150
010730028	0550	JEFFERSON COUNTY, AL DEPARTMENT OF HEALTH	1	Y										0	0	33.5292	-86.8503
010730034	0550	JEFFERSON COUNTY, AL DEPARTMENT OF HEALTH	1				Y							0	0	33.5278	-86.8083
010731003	0550	JEFFERSON COUNTY, AL DEPARTMENT OF HEALTH	3	Y	Y				Y					0	0	33.4858	-86.9147
010731005	0550	JEFFERSON COUNTY, AL DEPARTMENT OF HEALTH	2		Y			Y						0	0	33.3306	-87.0050
010731010	0550	JEFFERSON COUNTY, AL DEPARTMENT OF HEALTH	1				Y							0	0	33.5481	-86.5492
010732003	0550	JEFFERSON COUNTY, AL DEPARTMENT OF HEALTH	2				Y	Y						0	0	33.4986	-86.9236
010732006	0550	JEFFERSON COUNTY, AL DEPARTMENT OF HEALTH	2		Y			Y						0	0	33.3939	-86.8011
010735002	0550	JEFFERSON COUNTY, AL DEPARTMENT OF HEALTH	2		Y			Y						0	0	33.7044	-86.6689
010736002	0550	JEFFERSON COUNTY, AL DEPARTMENT OF HEALTH	2		Y		Y							0	0	33.5783	-86.7739
010736004	0550	JEFFERSON COUNTY, AL DEPARTMENT OF HEALTH	1	Y										0	0	33.5650	-86.7966
010790002	0013	AL DEPT OF ENV MGT	1		Y									0	0	34.3428	-87.3397
010790003	0013	AL DEPT OF ENV MGT	1						Y					0	0	34.5894	-87.1094
010890002	0300	DEPT OF NATURAL RES AND ENV MANAGEMENT	1				Y							0	0	34.7883	-86.6161
010890003	0300	DEPT OF NATURAL RES AND ENV MANAGEMENT	1				Y							0	0	34.7306	-86.5828
010890004	0300	DEPT OF NATURAL RES AND ENV MANAGEMENT	1				Y							0	0	34.6203	-86.5664
010890014	0300	DEPT OF NATURAL RES AND ENV MANAGEMENT	3		Y		Y	Y						0	0	34.6908	-86.5831
010910003	0013	AL DEPT OF ENV MGT	1				Y							0	0	32.5036	-87.8347
010970002	0013	AL DEPT OF ENV MGT	2				Y	Y						0	0	30.7700	-88.0875
010970003	0013	AL DEPT OF ENV MGT	1		Y									0	0	30.7697	-88.0875
010970015	0013	AL DEPT OF ENV MGT	1				Y							0	0	30.6992	-88.0472
010970016	0013	AL DEPT OF ENV MGT	1				Y							0	0	30.7203	-88.0589
010970028	0013	AL DEPT OF ENV MGT	1		Y									0	0	30.9583	-88.0283
010970030	0013	AL DEPT OF ENV MGT	1				Y							0	0	30.6583	-88.0367
010970031	0013	AL DEPT OF ENV MGT	1				Y							0	0	30.6986	-88.1819
010972005	0013	AL DEPT OF ENV MGT	4		Y		Y	Y	Y					0	0	30.4744	-88.1411
011010007	0013	AL DEPT OF ENV MGT	2				Y	Y						0	0	32.4258	-86.2853
011011002	0013	AL DEPT OF ENV MGT	4		Y		Y	Y			Y	Y		1	0	32.4069	-86.2564
011030011	0013	AL DEPT OF ENV MGT	3		Y		Y	Y						0	0	34.5308	-86.9769
011090003	0013	AL DEPT OF ENV MGT	2			Y	Y							0	0	31.7906	-85.9792
011090006	0013	AL DEPT OF ENV MGT	1			Y								0	0	31.7928	-85.9806
011130001	0013	AL DEPT OF ENV MGT	2				Y	Y						0	0	32.4764	-84.9992
011170003	0013	AL DEPT OF ENV MGT	1				Y							0	0	33.1089	-86.7536
011170004	0013	AL DEPT OF ENV MGT	2		Y						Y	Y		1	0	33.3169	-86.8250
011170006	0013	AL DEPT OF ENV MGT	1					Y						0	0	33.3128	-86.8211
011190002	0013	AL DEPT OF ENV MGT	2		Y			Y						0	0	32.3639	-88.2019
011210002	0013	AL DEPT OF ENV MGT	2				Y	Y						0	0	33.2794	-86.3494
011211002	0013	AL DEPT OF ENV MGT	1				Y							0	0	33.4367	-86.1006
011250003	0013	AL DEPT OF ENV MGT	1					Y						0	0	33.2169	-87.5389
011250010	0013	AL DEPT OF ENV MGT	1		Y									0	0	33.0895	-87.4597

AIRSSITE	AG_CODE	AGENCY_DES	M_Param	CO	O3	PB	PM10	PMFINE	SO2	NO2	NO	NOX	NOY	NOXcnt	NOYcnt	LAT	LONG
011270002	0013	AL DEPT OF ENV MGT	1					Y						0	0	33.8328	-87.2725
120010023	0391	FLORIDA DEPT ENVIRONMENTAL REGULATION, NORTHEAST DISTRICT	2				Y	Y						0	0	29.7033	-82.3914
120010024	0391	FLORIDA DEPT ENVIRONMENTAL REGULATION, NORTHEAST DISTRICT	1					Y						0	0	29.6583	-82.4083
120013011	0391	FLORIDA DEPT ENVIRONMENTAL REGULATION, NORTHEAST DISTRICT	1		Y									0	0	29.5467	-82.2969
120030002	0391	FLORIDA DEPT ENVIRONMENTAL REGULATION, NORTHEAST DISTRICT	1		Y									0	0	30.1975	-82.4450
120050006	0392	FLORIDA DEPT ENVIRONMENTAL REGULATION, NORTHWEST DISTRICT	1		Y									0	0	30.3356	-85.7311
120051004	0392	FLORIDA DEPT ENVIRONMENTAL REGULATION, NORTHWEST DISTRICT	2				Y	Y						0	0	30.1442	-85.6144
120090004	0396	FLORIDA DEPT ENVIRONMENTAL REGULATION, ST JOHNS RIVER DIST	1				Y							0	0	28.5111	-80.7947
120090007	0396	FLORIDA DEPT ENVIRONMENTAL REGULATION, ST JOHNS RIVER DIST	2		Y			Y						0	0	28.0539	-80.6286
120094001	0396	FLORIDA DEPT ENVIRONMENTAL REGULATION, ST JOHNS RIVER DIST	1		Y									0	0	28.3106	-80.6156
120110009	0121	BROWARD COUNTY ENVIRONMENTAL QUALITY CONTROL BOARD	2	Y			Y							0	0	26.1347	-80.1328
120110010	0121	BROWARD COUNTY ENVIRONMENTAL QUALITY CONTROL BOARD	3	Y			Y		Y					0	0	26.1286	-80.1672
120110011	0121	BROWARD COUNTY ENVIRONMENTAL QUALITY CONTROL BOARD	1				Y							0	0	26.0983	-80.1458
120110031	0121	BROWARD COUNTY ENVIRONMENTAL QUALITY CONTROL BOARD	2		Y					Y				1	0	26.2722	-80.2953
120111002	0121	BROWARD COUNTY ENVIRONMENTAL QUALITY CONTROL BOARD	2				Y	Y						0	0	26.0828	-80.2378
120111201	0121	BROWARD COUNTY ENVIRONMENTAL QUALITY CONTROL BOARD	1	Y										0	0	25.9822	-80.2478
120112003	0121	BROWARD COUNTY ENVIRONMENTAL QUALITY CONTROL BOARD	1		Y									0	0	26.2903	-80.0969
120112004	0121	BROWARD COUNTY ENVIRONMENTAL QUALITY CONTROL BOARD	3	Y			Y	Y						0	0	26.2172	-80.1278
120113002	0121	BROWARD COUNTY ENVIRONMENTAL QUALITY CONTROL BOARD	3	Y			Y	Y						0	0	26.0008	-80.1606
120115001	0121	BROWARD COUNTY ENVIRONMENTAL QUALITY CONTROL BOARD	1	Y										0	0	26.1717	-80.2039
120115002	0121	BROWARD COUNTY ENVIRONMENTAL QUALITY CONTROL BOARD	1				Y							0	0	26.0239	-80.2994
120115005	0121	BROWARD COUNTY ENVIRONMENTAL QUALITY CONTROL BOARD	2			Y	Y							0	0	26.2950	-80.1778
120116002	0121	BROWARD COUNTY ENVIRONMENTAL QUALITY CONTROL BOARD	1				Y							0	0	26.1403	-80.2444
120118002	0121	BROWARD COUNTY ENVIRONMENTAL QUALITY CONTROL BOARD	2		Y					Y				1	0	26.0864	-80.1114
120170005	0395	FLORIDA DEPT ENVIRONMENTAL REGULATION, SOUTHWEST DISTRICT	1					Y						0	0	28.9806	-82.7000
120210003	0393	FLORIDA DEPT ENVIRONMENTAL REGULATION, SOUTH DISTRICT	1				Y							0	0	26.1281	-81.7669
120230002	0391	FLORIDA DEPT ENVIRONMENTAL REGULATION, NORTHEAST DISTRICT	1		Y									0	0	30.1781	-82.6194
120250019	0274	DADE COUNTY DEPARTMENT ENVIRONMENTAL RESOURCES MANAGEMEN	1						Y					0	0	25.8975	-80.3800
120250020	0274	DADE COUNTY DEPARTMENT ENVIRONMENTAL RESOURCES MANAGEMEN	1				Y							0	0	25.8083	-80.3022
120250021	0274	DADE COUNTY DEPARTMENT ENVIRONMENTAL RESOURCES MANAGEMEN	1		Y									0	0	25.9242	-80.4486
120250027	0274	DADE COUNTY DEPARTMENT ENVIRONMENTAL RESOURCES MANAGEMEN	2		Y					Y				1	0	25.7386	-80.1631
120250029	0274	DADE COUNTY DEPARTMENT ENVIRONMENTAL RESOURCES MANAGEMEN	1		Y									0	0	25.5864	-80.3269
120250031	0274	DADE COUNTY DEPARTMENT ENVIRONMENTAL RESOURCES MANAGEMEN	1	Y										0	0	25.6217	-80.3453
120251016	0274	DADE COUNTY DEPARTMENT ENVIRONMENTAL RESOURCES MANAGEMEN	2				Y	Y						0	0	25.7942	-80.2061
120251019	0274	DADE COUNTY DEPARTMENT ENVIRONMENTAL RESOURCES MANAGEMEN	1	Y										0	0	25.7678	-80.2333
120253001	0274	DADE COUNTY DEPARTMENT ENVIRONMENTAL RESOURCES MANAGEMEN	1				Y							0	0	25.8336	-80.2422
120254002	0274	DADE COUNTY DEPARTMENT ENVIRONMENTAL RESOURCES MANAGEMEN	2	Y						Y				1	0	25.7983	-80.2103
120256001	0274	DADE COUNTY DEPARTMENT ENVIRONMENTAL RESOURCES MANAGEMEN	2				Y	Y						0	0	25.4714	-80.4833
120310032	0544	JACKSONVILLE BIO-ENVIRONMENTAL SERVICES DIVISION	3			Y			Y	Y				1	0	30.3561	-81.6356
120310053	0544	JACKSONVILLE BIO-ENVIRONMENTAL SERVICES DIVISION	1				Y							0	0	30.3522	-81.6283
120310077	0544	JACKSONVILLE BIO-ENVIRONMENTAL SERVICES DIVISION	1		Y									0	0	30.4775	-81.5875
120310080	0544	JACKSONVILLE BIO-ENVIRONMENTAL SERVICES DIVISION	2	Y					Y					0	0	30.3089	-81.6525
120310081	0544	JACKSONVILLE BIO-ENVIRONMENTAL SERVICES DIVISION	1						Y					0	0	30.4222	-81.6211
120310083	0544	JACKSONVILLE BIO-ENVIRONMENTAL SERVICES DIVISION	1	Y										0	0	30.3050	-81.7056
120310084	0544	JACKSONVILLE BIO-ENVIRONMENTAL SERVICES DIVISION	3	Y		Y	Y							0	0	30.3203	-81.6878
120310089	0544	JACKSONVILLE BIO-ENVIRONMENTAL SERVICES DIVISION	1				Y							0	0	30.3289	-81.6397
120310097	0544	JACKSONVILLE BIO-ENVIRONMENTAL SERVICES DIVISION	1						Y					0	0	30.3672	-81.5942
120310098	0544	JACKSONVILLE BIO-ENVIRONMENTAL SERVICES DIVISION	1					Y						0	0	30.1356	-81.6342
120310099	0544	JACKSONVILLE BIO-ENVIRONMENTAL SERVICES DIVISION	1					Y						0	0	30.3558	-81.5481
120311003	0544	JACKSONVILLE BIO-ENVIRONMENTAL SERVICES DIVISION	1		Y									0	0	30.2314	-81.7169
120330003	0392	FLORIDA DEPT ENVIRONMENTAL REGULATION, NORTHWEST DISTRICT	1				Y							0	0	30.6197	-87.3172
120330004	0392	FLORIDA DEPT ENVIRONMENTAL REGULATION, NORTHWEST DISTRICT	5		Y		Y	Y	Y	Y				1	0	30.5250	-87.2042

AIRSSITE	AG_CODE	AGENCY_DES	M_Param	CO	O3	PB	PM10	PMFINE	SO2	NO2	NO	NOX	NOY	NOXcnt	NOYcnt	LAT	LONG
120330018	0392	FLORIDA DEPT ENVIRONMENTAL REGULATION, NORTHWEST DISTRICT	1		Y									0	0	30.3681	-87.2708
120330022	0392	FLORIDA DEPT ENVIRONMENTAL REGULATION, NORTHWEST DISTRICT	1						Y					0	0	30.5447	-87.2161
120330024	0392	FLORIDA DEPT ENVIRONMENTAL REGULATION, NORTHWEST DISTRICT	1		Y									0	0	30.3919	-87.2764
120470015	0391	FLORIDA DEPT ENVIRONMENTAL REGULATION, NORTHEAST DISTRICT	2				Y		Y					0	0	30.4111	-82.7836
120550003	0393	FLORIDA DEPT ENVIRONMENTAL REGULATION, SOUTH DISTRICT	1		Y									0	0	27.1889	-81.3406
120570030	0491	HILLSBOROUGH COUNTY ENVIRONMENTAL PROTECTION COMMISSION	2				Y	Y						0	0	27.9319	-82.5097
120570053	0491	HILLSBOROUGH COUNTY ENVIRONMENTAL PROTECTION COMMISSION	1						Y					0	0	27.8864	-82.4814
120570066	0491	HILLSBOROUGH COUNTY ENVIRONMENTAL PROTECTION COMMISSION	1				Y							0	0	27.8942	-82.4011
120570081	0491	HILLSBOROUGH COUNTY ENVIRONMENTAL PROTECTION COMMISSION	3		Y				Y	Y				1	0	27.7397	-82.4653
120570083	0491	HILLSBOROUGH COUNTY ENVIRONMENTAL PROTECTION COMMISSION	1				Y							0	0	27.8639	-82.3844
120570085	0491	HILLSBOROUGH COUNTY ENVIRONMENTAL PROTECTION COMMISSION	1				Y							0	0	27.7925	-82.3683
120570095	0491	HILLSBOROUGH COUNTY ENVIRONMENTAL PROTECTION COMMISSION	2				Y		Y					0	0	27.9225	-82.4014
120570109	0491	HILLSBOROUGH COUNTY ENVIRONMENTAL PROTECTION COMMISSION	1						Y					0	0	27.8564	-82.3837
120570110	0491	HILLSBOROUGH COUNTY ENVIRONMENTAL PROTECTION COMMISSION	1		Y									0	0	27.7805	-82.1621
120571002	0491	HILLSBOROUGH COUNTY ENVIRONMENTAL PROTECTION COMMISSION	1				Y							0	0	27.9475	-82.4572
120571035	0491	HILLSBOROUGH COUNTY ENVIRONMENTAL PROTECTION COMMISSION	3		Y		Y		Y					0	0	27.9281	-82.4547
120571065	0491	HILLSBOROUGH COUNTY ENVIRONMENTAL PROTECTION COMMISSION	3		Y				Y	Y				1	0	27.8922	-82.5386
120571066	0491	HILLSBOROUGH COUNTY ENVIRONMENTAL PROTECTION COMMISSION	1			Y								0	0	27.9603	-82.3825
120571068	0491	HILLSBOROUGH COUNTY ENVIRONMENTAL PROTECTION COMMISSION	1				Y							0	0	28.1025	-82.5039
120571069	0491	HILLSBOROUGH COUNTY ENVIRONMENTAL PROTECTION COMMISSION	1				Y							0	0	27.9333	-82.4489
120571070	0491	HILLSBOROUGH COUNTY ENVIRONMENTAL PROTECTION COMMISSION	2	Y			Y							0	0	27.9875	-82.4542
120571073	0491	HILLSBOROUGH COUNTY ENVIRONMENTAL PROTECTION COMMISSION	1			Y								0	0	27.9658	-82.3794
120571074	0491	HILLSBOROUGH COUNTY ENVIRONMENTAL PROTECTION COMMISSION	1			Y								0	0	27.9714	-82.3822
120571075	0491	HILLSBOROUGH COUNTY ENVIRONMENTAL PROTECTION COMMISSION	1					Y						0	0	28.0500	-82.3781
120572002	0491	HILLSBOROUGH COUNTY ENVIRONMENTAL PROTECTION COMMISSION	1				Y							0	0	27.9686	-82.2786
120574004	0491	HILLSBOROUGH COUNTY ENVIRONMENTAL PROTECTION COMMISSION	3	Y	Y				Y					0	0	27.9925	-82.1258
120590004	0392	FLORIDA DEPT ENVIRONMENTAL REGULATION, NORTHWEST DISTRICT	1		Y									0	0	30.8475	-85.6044
120690001	0396	FLORIDA DEPT ENVIRONMENTAL REGULATION, ST JOHNS RIVER DIST	1				Y							0	0	29.1078	-81.6331
120690002	0396	FLORIDA DEPT ENVIRONMENTAL REGULATION, ST JOHNS RIVER DIST	1		Y									0	0	28.5250	-81.7233
120710005	0393	FLORIDA DEPT ENVIRONMENTAL REGULATION, SOUTH DISTRICT	2				Y	Y						0	0	26.6028	-81.8789
120712001	0393	FLORIDA DEPT ENVIRONMENTAL REGULATION, SOUTH DISTRICT	1		Y									0	0	26.6314	-81.9603
120712002	0393	FLORIDA DEPT ENVIRONMENTAL REGULATION, SOUTH DISTRICT	1		Y									0	0	26.5479	-81.9800
120713002	0393	FLORIDA DEPT ENVIRONMENTAL REGULATION, SOUTH DISTRICT	1		Y									0	0	26.4489	-81.9394
120730012	0392	FLORIDA DEPT ENVIRONMENTAL REGULATION, NORTHWEST DISTRICT	2		Y			Y						0	0	30.4397	-84.3483
120730013	0418	FLORIDA DEP OF ENVIRONMENTAL PROTECTION LAB, TALLAHASSEE	1		Y									0	0	30.4844	-84.1992
120731005	0392	FLORIDA DEPT ENVIRONMENTAL REGULATION, NORTHWEST DISTRICT	1				Y							0	0	30.2669	-84.4283
120810008	0638	MANATEE COUNTY HEALTH DEPARTMENT	1				Y							0	0	27.6228	-82.5394
120813002	0638	MANATEE COUNTY HEALTH DEPARTMENT	2		Y				Y					0	0	27.6328	-82.5461
120814012	0638	MANATEE COUNTY HEALTH DEPARTMENT	3		Y			Y		Y		Y		1	0	27.4806	-82.6189
120814013	0638	MANATEE COUNTY HEALTH DEPARTMENT	1		Y									0	0	27.4494	-82.5222
120830003	0396	FLORIDA DEPT ENVIRONMENTAL REGULATION, ST JOHNS RIVER DIST	2		Y			Y						0	0	29.1703	-82.1008
120830004	0396	FLORIDA DEPT ENVIRONMENTAL REGULATION, ST JOHNS RIVER DIST	1		Y									0	0	29.1925	-82.1733
120871002	0393	FLORIDA DEPT ENVIRONMENTAL REGULATION, SOUTH DISTRICT	1				Y							0	0	24.5808	-81.7467
120872002	0393	FLORIDA DEPT ENVIRONMENTAL REGULATION, SOUTH DISTRICT	1				Y							0	0	24.7117	-81.0986
120890005	0391	FLORIDA DEPT ENVIRONMENTAL REGULATION, NORTHEAST DISTRICT	2				Y		Y					0	0	30.6583	-81.4633
120950004	0820	ORANGE COUNTY HEALTH DEPARTMENT	1				Y							0	0	28.7356	-81.6019
120950007	0820	ORANGE COUNTY HEALTH DEPARTMENT	1				Y							0	0	28.5072	-81.4169
120950008	0820	ORANGE COUNTY HEALTH DEPARTMENT	1		Y									0	0	28.4542	-81.3814
120951004	0820	ORANGE COUNTY HEALTH DEPARTMENT	2				Y	Y						0	0	28.5508	-81.3456
120951005	0820	ORANGE COUNTY HEALTH DEPARTMENT	1	Y										0	0	28.5419	-81.3786
120952002	0820	ORANGE COUNTY HEALTH DEPARTMENT	6	Y	Y		Y	Y	Y	Y				1	0	28.5994	-81.3631
120972002	0396	FLORIDA DEPT ENVIRONMENTAL REGULATION, ST JOHNS RIVER DIST	1		Y									0	0	28.3472	-81.6367

AIRSSITE	AG_CODE	AGENCY_DES	M_Param	CO	O3	PB	PM10	PMFINE	SO2	NO2	NO	NOX	NOY	NOXcnt	NOYcnt	LAT	LONG
120990008	0833	PALM BEACH COUNTY HEALTH DEPARTMENT	2				Y	Y						0	0	26.7244	-80.6667
120990009	0833	PALM BEACH COUNTY HEALTH DEPARTMENT	2		Y			Y						0	0	26.1250	-80.3914
120991004	0833	PALM BEACH COUNTY HEALTH DEPARTMENT	3	Y				Y		Y				1	0	26.6931	-80.0994
120992004	0833	PALM BEACH COUNTY HEALTH DEPARTMENT	1		Y									0	0	26.4656	-80.0761
120992005	0833	PALM BEACH COUNTY HEALTH DEPARTMENT	2				Y	Y						0	0	26.4578	-80.0931
120993004	0833	PALM BEACH COUNTY HEALTH DEPARTMENT	1						Y					0	0	26.3697	-80.0744
121010005	0395	FLORIDA DEPT ENVIRONMENTAL REGULATION, SOUTHWEST DISTRICT	1		Y									0	0	28.3319	-82.3058
121012001	0395	FLORIDA DEPT ENVIRONMENTAL REGULATION, SOUTHWEST DISTRICT	1		Y									0	0	28.1950	-82.7581
121030004	0867	PINELLAS COUNTY DEPARTMENT OF ENVIRONMENTAL MANAGEMENT	1		Y									0	0	27.9464	-82.7319
121030012	0867	PINELLAS COUNTY DEPARTMENT OF ENVIRONMENTAL MANAGEMENT	1				Y							0	0	27.7844	-82.6594
121030018	0867	PINELLAS COUNTY DEPARTMENT OF ENVIRONMENTAL MANAGEMENT	5	Y	Y		Y	Y		Y				1	0	27.7856	-82.7400
121030023	0867	PINELLAS COUNTY DEPARTMENT OF ENVIRONMENTAL MANAGEMENT	1						Y					0	0	27.8633	-82.6233
121030024	0867	PINELLAS COUNTY DEPARTMENT OF ENVIRONMENTAL MANAGEMENT	1	Y										0	0	27.7928	-82.7281
121031008	0867	PINELLAS COUNTY DEPARTMENT OF ENVIRONMENTAL MANAGEMENT	1					Y						0	0	28.0000	-82.7764
121032006	0867	PINELLAS COUNTY DEPARTMENT OF ENVIRONMENTAL MANAGEMENT	1	Y										0	0	28.0472	-82.7100
121032008	0867	PINELLAS COUNTY DEPARTMENT OF ENVIRONMENTAL MANAGEMENT	1	Y										0	0	27.8925	-82.6806
121033002	0867	PINELLAS COUNTY DEPARTMENT OF ENVIRONMENTAL MANAGEMENT	1						Y					0	0	27.8714	-82.6917
121033004	0867	PINELLAS COUNTY DEPARTMENT OF ENVIRONMENTAL MANAGEMENT	1				Y							0	0	27.8956	-82.7747
121033005	0867	PINELLAS COUNTY DEPARTMENT OF ENVIRONMENTAL MANAGEMENT	1			Y								0	0	27.8758	-82.6964
121035002	0867	PINELLAS COUNTY DEPARTMENT OF ENVIRONMENTAL MANAGEMENT	3		Y		Y		Y					0	0	28.0900	-82.7008
121035003	0867	PINELLAS COUNTY DEPARTMENT OF ENVIRONMENTAL MANAGEMENT	1						Y					0	0	28.1417	-82.7397
121050010	0395	FLORIDA DEPT ENVIRONMENTAL REGULATION, SOUTHWEST DISTRICT	2				Y		Y					0	0	27.8561	-82.0178
121052006	0395	FLORIDA DEPT ENVIRONMENTAL REGULATION, SOUTHWEST DISTRICT	2				Y		Y					0	0	27.8969	-81.9603
121056005	0395	FLORIDA DEPT ENVIRONMENTAL REGULATION, SOUTHWEST DISTRICT	1		Y									0	0	27.9394	-82.0003
121056006	0395	FLORIDA DEPT ENVIRONMENTAL REGULATION, SOUTHWEST DISTRICT	2		Y			Y						0	0	28.0292	-81.9722
121071008	0391	FLORIDA DEPT ENVIRONMENTAL REGULATION, NORTHEAST DISTRICT	2				Y		Y					0	0	29.6875	-81.6567
121110012	0394	FLORIDA DEPT ENVIRONMENTAL REGULATION, SOUTHEAST DISTRICT	1				Y							0	0	27.3908	-80.3986
121111002	0394	FLORIDA DEPT ENVIRONMENTAL REGULATION, SOUTHEAST DISTRICT	3		Y			Y		Y				1	0	27.4497	-80.4081
121130014	0392	FLORIDA DEPT ENVIRONMENTAL REGULATION, NORTHWEST DISTRICT	1		Y									0	0	30.1308	-85.7317
121150013	0951	SARASOTA COUNTY ENVIRONMENTAL CONTROL	2				Y	Y						0	0	27.2906	-82.5075
121150014	0951	SARASOTA COUNTY ENVIRONMENTAL CONTROL	1	Y										0	0	27.0739	-82.4242
121151003	0951	SARASOTA COUNTY ENVIRONMENTAL CONTROL	1				Y							0	0	27.2994	-82.5228
121151004	0951	SARASOTA COUNTY ENVIRONMENTAL CONTROL	1	Y										0	0	27.3356	-82.5311
121151005	0951	SARASOTA COUNTY ENVIRONMENTAL CONTROL	2		Y				Y					0	0	27.3069	-82.5706
121151006	0951	SARASOTA COUNTY ENVIRONMENTAL CONTROL	4		Y		Y		Y	Y				1	0	27.3503	-82.4800
121152001	0951	SARASOTA COUNTY ENVIRONMENTAL CONTROL	1				Y							0	0	27.1008	-82.4361
121171002	0396	FLORIDA DEPT ENVIRONMENTAL REGULATION, ST JOHNS RIVER DIST	3		Y		Y	Y						0	0	28.7456	-81.3100
121272001	0396	FLORIDA DEPT ENVIRONMENTAL REGULATION, ST JOHNS RIVER DIST	1		Y									0	0	29.1089	-80.9939
121275002	0396	FLORIDA DEPT ENVIRONMENTAL REGULATION, ST JOHNS RIVER DIST	3		Y		Y	Y						0	0	29.2067	-81.0531
121290001	0418	FLORIDA DEP OF ENVIRONMENTAL PROTECTION LAB, TALLAHASSEE	1		Y									0	0	30.0931	-84.1619
130090001	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1						Y					0	0	33.1664	-83.2497
130150002	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1						Y					0	0	34.1033	-84.9153
130210007	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	2				Y	Y						0	0	32.7794	-83.6469
130210012	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	3		Y			Y	Y					0	0	32.8031	-83.5447
130510014	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1				Y							0	0	32.0619	-81.0672
130510017	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1					Y						0	0	32.0928	-81.1442
130510019	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1						Y					0	0	32.0939	-81.1511
130510021	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	2		Y				Y					0	0	32.0683	-81.0489
130510091	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1					Y						0	0	32.1108	-81.1614
130511002	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1				Y							0	0	32.0903	-81.1306
130550001	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1				Y							0	0	34.4742	-85.4081
130570001	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1		Y									0	0	34.3203	-84.5547

AIRSSITE	AG_CODE	AGENCY_DES	M_Param	CO	O3	PB	PM10	PMFINE	SO2	NO2	NO	NOX	NOY	NOXcnt	NOYcnt	LAT	LONG
130590001	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1					Y						0	0	33.9458	-83.3722
130630091	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1					Y						0	0	33.6097	-84.3911
130670003	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	2		Y			Y						0	0	34.0144	-84.6075
130770002	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1		Y									0	0	33.4039	-84.7461
130850001	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1		Y									0	0	34.3778	-84.0561
130890002	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	4		Y			Y		Y	Y	Y	Y	1	1	33.6875	-84.2903
130890003	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1			Y								0	0	33.6983	-84.2733
130891002	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1	Y										0	0	33.7892	-84.2358
130892001	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	2				Y	Y						0	0	33.9031	-84.2789
130893001	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	3		Y					Y	Y	Y	Y	1	1	33.8478	-84.2136
130950006	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1						Y					0	0	31.5678	-84.1028
130950007	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	2				Y	Y						0	0	31.5769	-84.0997
130970003	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1				Y							0	0	33.7775	-84.7081
130970004	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1		Y									0	0	33.7433	-84.7789
131110091	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1						Y					0	0	34.9856	-84.3753
131130001	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1		Y									0	0	33.4556	-84.4203
131150003	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1						Y					0	0	34.2614	-85.3242
131150005	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	2				Y	Y						0	0	34.2633	-85.2725
131210001	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1				Y							0	0	33.7517	-84.3828
131210039	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	2				Y	Y						0	0	33.8017	-84.4358
131210048	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	3				Y		Y	Y	Y	Y		1	0	33.7758	-84.4008
131210055	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	2		Y				Y					0	0	33.7206	-84.3578
131210099	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1	Y										0	0	33.8764	-84.3803
131270004	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1				Y							0	0	31.1811	-81.5042
131270006	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	3		Y			Y	Y					0	0	31.1694	-81.4964
131350002	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	2		Y			Y						0	0	33.9636	-84.0664
131390003	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1					Y						0	0	34.2989	-83.8144
131510002	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1		Y									0	0	33.4347	-84.1617
131530001	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1					Y						0	0	32.6058	-83.5978
131850003	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1					Y						0	0	30.8481	-83.2944
132130003	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1		Y									0	0	34.7850	-84.6269
132150001	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1					Y						0	0	32.4825	-84.9825
132150008	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	2		Y				Y					0	0	32.5214	-84.9436
132150009	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1			Y								0	0	32.4878	-84.9289
132150010	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1			Y								0	0	32.4364	-84.9339
132150011	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	3			Y	Y	Y						0	0	32.4308	-84.9317
132151003	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1		Y									0	0	32.5394	-84.8433
132230003	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	3		Y			Y		Y	Y	Y		1	0	33.9283	-85.0453
132450003	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1						Y					0	0	33.3936	-82.0064
132450005	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1					Y						0	0	33.4686	-81.9914
132450091	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	3		Y		Y	Y						0	0	33.4333	-82.0219
132470001	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	3		Y					Y	Y	Y	Y	1	1	33.5856	-84.0667
132550002	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1				Y							0	0	33.2647	-84.2850
132611001	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1		Y									0	0	31.9531	-84.0794
132950002	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	2				Y	Y						0	0	34.9661	-85.2975
133030001	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	2				Y	Y						0	0	32.9747	-82.8089
133190001	0437	GEORGIA AIR PROTECTION BRANCH AMBIENT MONITORING PROGRAM	1					Y						0	0	32.8817	-83.3339
210130002	0584	KENTUCKY DIVISION FOR AIR QUALITY	3		Y		Y	Y						0	0	36.6081	-83.7369
210150003	0584	KENTUCKY DIVISION FOR AIR QUALITY	1		Y									0	0	38.9181	-84.8528
210190002	0584	KENTUCKY DIVISION FOR AIR QUALITY	1				Y							0	0	38.4786	-82.6319
210190017	0584	KENTUCKY DIVISION FOR AIR QUALITY	6	Y	Y		Y	Y	Y	Y				1	0	38.4592	-82.6406
210192001	0584	KENTUCKY DIVISION FOR AIR QUALITY	1				Y							0	0	38.4153	-82.5983

AIRSSITE	AG_CODE	AGENCY_DES	M_Param	CO	O3	PB	PM10	PMFINE	SO2	NO2	NO	NOX	NOY	NOXcnt	NOYcnt	LAT	LONG
210290006	0584	KENTUCKY DIVISION FOR AIR QUALITY	4		Y		Y	Y		Y	Y			1	0	37.9856	-85.7131
210370003	0584	KENTUCKY DIVISION FOR AIR QUALITY	5		Y		Y	Y	Y	Y	Y			1	0	39.0656	-84.4519
210430500	0584	KENTUCKY DIVISION FOR AIR QUALITY	2		Y			Y						0	0	38.2383	-82.9883
210590005	0584	KENTUCKY DIVISION FOR AIR QUALITY	4		Y		Y		Y	Y	Y			1	0	37.7808	-87.0756
210590014	0584	KENTUCKY DIVISION FOR AIR QUALITY	2				Y	Y						0	0	37.7411	-87.1181
210670001	0584	KENTUCKY DIVISION FOR AIR QUALITY	1		Y									0	0	38.1258	-84.4683
210670012	0584	KENTUCKY DIVISION FOR AIR QUALITY	6	Y	Y		Y	Y	Y	Y	Y			1	0	38.0650	-84.5000
210670014	0584	KENTUCKY DIVISION FOR AIR QUALITY	2				Y	Y						0	0	38.0389	-84.5075
210730006	0584	KENTUCKY DIVISION FOR AIR QUALITY	1					Y						0	0	38.2194	-84.8385
210830003	0584	KENTUCKY DIVISION FOR AIR QUALITY	1		Y									0	0	36.8992	-88.4936
210890007	0584	KENTUCKY DIVISION FOR AIR QUALITY	2		Y				Y					0	0	38.5483	-82.7317
210910012	0584	KENTUCKY DIVISION FOR AIR QUALITY	2		Y				Y					0	0	37.9389	-86.8969
210930006	0584	KENTUCKY DIVISION FOR AIR QUALITY	3		Y		Y	Y						0	0	37.7064	-85.8517
210950003	0584	KENTUCKY DIVISION FOR AIR QUALITY	1				Y							0	0	36.8464	-83.3217
211010006	0584	KENTUCKY DIVISION FOR AIR QUALITY	2				Y	Y						0	0	37.8650	-87.5575
211010013	0584	KENTUCKY DIVISION FOR AIR QUALITY	4		Y		Y		Y	Y	Y			1	0	37.8589	-87.5753
211010014	0584	KENTUCKY DIVISION FOR AIR QUALITY	1		Y									0	0	37.8714	-87.4633
211110027	0549	JEFFERSON COUNTY, KY AIR POLLUTION CONTROL DISTRICT	2		Y			Y						0	0	38.1372	-85.5783
211110032	0549	JEFFERSON COUNTY, KY AIR POLLUTION CONTROL DISTRICT	1						Y					0	0	38.1825	-85.8617
211110043	0549	JEFFERSON COUNTY, KY AIR POLLUTION CONTROL DISTRICT	1					Y						0	0	38.2322	-85.8253
211110044	0549	JEFFERSON COUNTY, KY AIR POLLUTION CONTROL DISTRICT	2				Y	Y						0	0	38.1908	-85.7806
211110045	0549	JEFFERSON COUNTY, KY AIR POLLUTION CONTROL DISTRICT	1	Y										0	0	38.2511	-85.7586
211110046	0549	JEFFERSON COUNTY, KY AIR POLLUTION CONTROL DISTRICT	1	Y										0	0	38.2081	-85.6556
211110048	0549	JEFFERSON COUNTY, KY AIR POLLUTION CONTROL DISTRICT	2				Y	Y						0	0	38.2406	-85.7317
211110051	0549	JEFFERSON COUNTY, KY AIR POLLUTION CONTROL DISTRICT	6	Y	Y		Y	Y	Y	Y	Y			1	0	38.0608	-85.8961
211110052	0549	JEFFERSON COUNTY, KY AIR POLLUTION CONTROL DISTRICT	1	Y										0	0	38.1378	-85.6867
211110054	0549	JEFFERSON COUNTY, KY AIR POLLUTION CONTROL DISTRICT	1			Y								0	0	38.2269	-85.8233
211110055	0549	JEFFERSON COUNTY, KY AIR POLLUTION CONTROL DISTRICT	1			Y								0	0	38.2053	-85.8526
211110056	0549	JEFFERSON COUNTY, KY AIR POLLUTION CONTROL DISTRICT	1			Y								0	0	38.2422	-85.7777
211110057	0549	JEFFERSON COUNTY, KY AIR POLLUTION CONTROL DISTRICT	1			Y								0	0	38.2192	-85.5831
211111009	0549	JEFFERSON COUNTY, KY AIR POLLUTION CONTROL DISTRICT	1				Y							0	0	38.2703	-85.7883
211111019	0549	JEFFERSON COUNTY, KY AIR POLLUTION CONTROL DISTRICT	1	Y										0	0	38.2289	-85.7022
211111021	0549	JEFFERSON COUNTY, KY AIR POLLUTION CONTROL DISTRICT	2		Y					Y	Y			1	0	38.2636	-85.7117
211111041	0549	JEFFERSON COUNTY, KY AIR POLLUTION CONTROL DISTRICT	3				Y	Y	Y					0	0	38.2269	-85.8233
211113001	0549	JEFFERSON COUNTY, KY AIR POLLUTION CONTROL DISTRICT	1				Y							0	0	38.1375	-85.6867
211130001	0584	KENTUCKY DIVISION FOR AIR QUALITY	1		Y									0	0	37.8933	-84.5892
211170007	0584	KENTUCKY DIVISION FOR AIR QUALITY	4		Y		Y	Y		Y	Y			1	0	39.0725	-84.5250
211250004	0584	KENTUCKY DIVISION FOR AIR QUALITY	2				Y	Y						0	0	37.0872	-84.0633
211390003	0584	KENTUCKY DIVISION FOR AIR QUALITY	1		Y									0	0	37.1556	-88.3931
211390004	0584	KENTUCKY DIVISION FOR AIR QUALITY	2				Y		Y					0	0	37.0708	-88.3342
211451004	0584	KENTUCKY DIVISION FOR AIR QUALITY	2				Y	Y						0	0	37.0656	-88.6378
211451024	0584	KENTUCKY DIVISION FOR AIR QUALITY	4		Y		Y		Y	Y	Y			1	0	37.0581	-88.5725
211490001	0584	KENTUCKY DIVISION FOR AIR QUALITY	1		Y									0	0	37.6064	-87.2539
211510003	0584	KENTUCKY DIVISION FOR AIR QUALITY	2				Y	Y						0	0	37.7381	-84.2856
211570010	0584	KENTUCKY DIVISION FOR AIR QUALITY	1				Y							0	0	37.0311	-88.3506
211630002	0549	JEFFERSON COUNTY, KY AIR POLLUTION CONTROL DISTRICT	1			Y								0	0	37.9476	-86.0430
211850004	0584	KENTUCKY DIVISION FOR AIR QUALITY	1		Y									0	0	38.3986	-85.4433
211930003	0584	KENTUCKY DIVISION FOR AIR QUALITY	3		Y		Y	Y						0	0	37.2831	-83.2203
211950002	0584	KENTUCKY DIVISION FOR AIR QUALITY	4		Y		Y	Y	Y					0	0	37.4828	-82.5353
211990003	0584	KENTUCKY DIVISION FOR AIR QUALITY	2		Y		Y							0	0	37.0975	-84.6117
212090001	0584	KENTUCKY DIVISION FOR AIR QUALITY	1		Y									0	0	38.3858	-84.5600
212130004	0584	KENTUCKY DIVISION FOR AIR QUALITY	1		Y									0	0	36.7086	-86.5664

AIRSSITE	AG_CODE	AGENCY_DES	M_Param	CO	O3	PB	PM10	PMFINE	SO2	NO2	NO	NOX	NOY	NOXcnt	NOYcnt	LAT	LONG
212270007	0584	KENTUCKY DIVISION FOR AIR QUALITY	1					Y						0	0	36.9933	-86.4183
212270008	0584	KENTUCKY DIVISION FOR AIR QUALITY	4		Y		Y		Y	Y	Y			1	0	37.0367	-86.2506
212350002	0584	KENTUCKY DIVISION FOR AIR QUALITY	1				Y							0	0	36.9300	-84.0947
280010004	0703	MISSISSIPPI DEQ, OFFICE OF POLLUTION	2		Y			Y						0	0	31.5604	-91.3903
280110001	0703	MISSISSIPPI DEQ, OFFICE OF POLLUTION	2		Y			Y						0	0	33.7461	-90.7230
280330002	0703	MISSISSIPPI DEQ, OFFICE OF POLLUTION	3		Y			Y		Y	Y	Y		1	0	34.8229	-89.9822
280350004	0703	MISSISSIPPI DEQ, OFFICE OF POLLUTION	1					Y						0	0	31.3236	-89.2872
280430001	0703	MISSISSIPPI DEQ, OFFICE OF POLLUTION	1					Y						0	0	33.8361	-89.7972
280450001	0703	MISSISSIPPI DEQ, OFFICE OF POLLUTION	3		Y			Y		Y	Y	Y		1	0	30.2302	-89.5674
280450002	0703	MISSISSIPPI DEQ, OFFICE OF POLLUTION	1		Y									0	0	30.3800	-89.4483
280470007	0703	MISSISSIPPI DEQ, OFFICE OF POLLUTION	1						Y					0	0	30.4468	-89.0291
280470008	0703	MISSISSIPPI DEQ, OFFICE OF POLLUTION	2		Y			Y						0	0	30.3901	-89.0497
280470009	0703	MISSISSIPPI DEQ, OFFICE OF POLLUTION	1		Y									0	0	30.5669	-89.1806
280490010	0703	MISSISSIPPI DEQ, OFFICE OF POLLUTION	2		Y			Y						0	0	32.3856	-90.1409
280490018	0703	MISSISSIPPI DEQ, OFFICE OF POLLUTION	3	Y				Y	Y					0	0	32.2968	-90.1883
280590006	0703	MISSISSIPPI DEQ, OFFICE OF POLLUTION	4		Y		Y	Y	Y					0	0	30.3782	-88.5339
280590007	0703	MISSISSIPPI DEQ, OFFICE OF POLLUTION	1		Y									0	0	30.5228	-88.7086
280670002	0703	MISSISSIPPI DEQ, OFFICE OF POLLUTION	1					Y						0	0	31.6884	-89.1351
280750003	0703	MISSISSIPPI DEQ, OFFICE OF POLLUTION	2		Y			Y						0	0	32.3644	-88.7314
280810005	0703	MISSISSIPPI DEQ, OFFICE OF POLLUTION	3		Y		Y	Y						0	0	34.2649	-88.7662
280870001	0703	MISSISSIPPI DEQ, OFFICE OF POLLUTION	1					Y						0	0	33.4910	-88.4185
280890002	0703	MISSISSIPPI DEQ, OFFICE OF POLLUTION	1		Y									0	0	32.5648	-90.1786
281090001	0703	MISSISSIPPI DEQ, OFFICE OF POLLUTION	1					Y						0	0	30.5295	-89.6911
281210001	0703	MISSISSIPPI DEQ, OFFICE OF POLLUTION	1					Y						0	0	32.2755	-90.1325
281230001	0703	MISSISSIPPI DEQ, OFFICE OF POLLUTION	1					Y						0	0	32.3200	-89.6667
281490004	0703	MISSISSIPPI DEQ, OFFICE OF POLLUTION	2		Y			Y						0	0	32.3228	-90.8871
370010002	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	1					Y						0	0	36.0890	-79.4078
370030003	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2		Y				Y					0	0	35.9036	-81.1842
370110002	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	1		Y									0	0	35.9717	-81.9342
370130006	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	1						Y					0	0	35.3778	-76.7669
370210003	0779	NORTH CAROLINA WESTERN REGIONAL AIR POLLUTION CONTROL AGENC	1				Y							0	0	35.5986	-82.5486
370210030	0779	NORTH CAROLINA WESTERN REGIONAL AIR POLLUTION CONTROL AGENC	1		Y									0	0	35.5000	-82.6000
370210034	0779	NORTH CAROLINA WESTERN REGIONAL AIR POLLUTION CONTROL AGENC	1					Y						0	0	35.6097	-82.3508
370250004	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2				Y	Y						0	0	35.5069	-80.6181
370270003	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	1		Y									0	0	35.9358	-81.5303
370290099	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	1		Y									0	0	36.3269	-76.1216
370330001	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2		Y			Y						0	0	36.3070	-79.4674
370350004	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2				Y	Y						0	0	35.7289	-81.3656
370350005	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	1					Y						0	0	35.5956	-81.4019
370370004	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	4		Y			Y	Y		Y		Y	0	1	35.7572	-79.1597
370510007	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	1	Y										0	0	35.0294	-78.9292
370510008	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	1		Y									0	0	35.1587	-78.7280
370510009	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2				Y	Y						0	0	35.0414	-78.9531
370511003	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2		Y				Y					0	0	34.9689	-78.9625
370570002	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2				Y	Y						0	0	35.8144	-80.2625
370590002	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2		Y				Y					0	0	35.8093	-80.5591
370610002	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	3		Y			Y	Y					0	0	34.9548	-77.9608
370630001	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2				Y	Y						0	0	35.9919	-78.8964
370630013	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	3	Y	Y						Y		Y	0	1	36.0356	-78.9042
370650003	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2				Y	Y						0	0	35.9533	-77.7858
370650099	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2		Y				Y					0	0	35.9883	-77.5828
370670022	0403	FORSYTH COUNTY ENVIRONMENTAL AFFAIRS DEPARTMENT	7	Y	Y		Y	Y	Y	Y	Y	Y	Y	1	1	36.1106	-80.2267

AIRSSITE	AG_CODE	AGENCY_DES	M_Param	CO	O3	PB	PM10	PMFINE	SO2	NO2	NO	NOX	NOY	NOXcnt	NOYcnt	LAT	LONG
370670023	0403	FORSYTH COUNTY ENVIRONMENTAL AFFAIRS DEPARTMENT	2	Y			Y							0	0	36.0658	-80.2583
370670024	0403	FORSYTH COUNTY ENVIRONMENTAL AFFAIRS DEPARTMENT	1					Y						0	0	36.1714	-80.2819
370670027	0403	FORSYTH COUNTY ENVIRONMENTAL AFFAIRS DEPARTMENT	1		Y									0	0	36.2364	-80.4106
370670028	0403	FORSYTH COUNTY ENVIRONMENTAL AFFAIRS DEPARTMENT	1		Y									0	0	36.2031	-80.2158
370670029	0403	FORSYTH COUNTY ENVIRONMENTAL AFFAIRS DEPARTMENT	1	Y										0	0	36.0642	-80.3100
370671008	0403	FORSYTH COUNTY ENVIRONMENTAL AFFAIRS DEPARTMENT	3		Y						Y	Y	Y	1	1	36.0508	-80.1439
370690001	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2		Y						Y		Y	0	1	36.0962	-78.4637
370710016	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2				Y	Y						0	0	35.2531	-81.1533
370770001	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	3	Y	Y						Y		Y	0	1	36.1411	-78.7681
370810009	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2				Y	Y						0	0	36.0758	-79.7944
370810011	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	1		Y									0	0	36.1133	-79.7039
370810013	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2				Y	Y						0	0	36.1092	-79.8011
370811011	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	1	Y										0	0	36.0881	-79.7947
370870004	0779	NORTH CAROLINA WESTERN REGIONAL AIR POLLUTION CONTROL AGENCY	1		Y									0	0	35.5053	-82.9647
370870010	0779	NORTH CAROLINA WESTERN REGIONAL AIR POLLUTION CONTROL AGENCY	1					Y						0	0	35.4892	-82.9875
370870011	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	1				Y							0	0	35.5286	-82.8361
370870035	0779	NORTH CAROLINA WESTERN REGIONAL AIR POLLUTION CONTROL AGENCY	1		Y									0	0	35.3792	-82.7925
370870036	0779	NORTH CAROLINA WESTERN REGIONAL AIR POLLUTION CONTROL AGENCY	1		Y									0	0	35.5900	-83.0775
370891006	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	1				Y							0	0	35.3133	-82.4617
370990005	0272	CHEROKEE	1		Y									0	0	35.5244	-83.2361
370990006	0272	CHEROKEE	1					Y						0	0	35.4667	-83.2781
371010002	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2		Y				Y					0	0	35.5908	-78.4619
371070004	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	4		Y			Y			Y	Y	Y	1	1	35.2315	-77.5688
371090004	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	3		Y				Y		Y		Y	0	1	35.4386	-81.2768
371110004	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2				Y	Y						0	0	35.6874	-81.9938
371170001	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2		Y				Y					0	0	35.8107	-76.9063
371190001	0669	MECKLENBURG COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION	1				Y							0	0	35.2219	-80.8386
371190003	0669	MECKLENBURG COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION	1				Y							0	0	35.2514	-80.8250
371190010	0669	MECKLENBURG COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION	2				Y	Y						0	0	35.2253	-80.8833
371190038	0669	MECKLENBURG COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION	1	Y										0	0	35.2292	-80.8408
371190041	0669	MECKLENBURG COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION	6	Y	Y			Y	Y	Y	Y	Y	Y	1	1	35.2403	-80.7856
371190042	0669	MECKLENBURG COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION	1					Y						0	0	35.1514	-80.8669
371191001	0669	MECKLENBURG COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION	1				Y							0	0	35.4983	-80.8528
371191005	0669	MECKLENBURG COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION	2		Y		Y							0	0	35.1131	-80.9197
371191009	0669	MECKLENBURG COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION	4	Y	Y						Y	Y	Y	1	1	35.3486	-80.6936
371210001	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2				Y	Y						0	0	35.9153	-82.0733
371230001	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	1					Y						0	0	35.2600	-79.8400
371290002	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	1		Y									0	0	34.3642	-77.8386
371290006	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	1						Y					0	0	34.2684	-77.9565
371290008	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	1	Y										0	0	34.2105	-77.8861
371290009	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2				Y	Y						0	0	34.2372	-77.9101
371310002	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2		Y				Y					0	0	36.4844	-77.6200
371330005	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2				Y	Y						0	0	34.7728	-77.4280
371350007	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	1					Y						0	0	35.9019	-79.0567
371390002	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2				Y	Y						0	0	36.2294	-76.2942
371450003	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2		Y				Y					0	0	36.3070	-79.0920
371470005	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2				Y	Y						0	0	35.5942	-77.3861
371470099	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2		Y				Y					0	0	35.5833	-77.5989
371510004	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	1		Y									0	0	35.8306	-79.8653
371550005	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	1					Y						0	0	34.6425	-78.9903
371570099	0403	FORSYTH COUNTY ENVIRONMENTAL AFFAIRS DEPARTMENT	1		Y									0	0	36.3089	-79.8592
371590021	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	4	Y	Y						Y	Y	Y	1	1	35.5519	-80.3950

AIRSSITE	AG_CODE	AGENCY_DES	M_Param	CO	O3	PB	PM10	PMFINE	SO2	NO2	NO	NOX	NOY	NOXcnt	NOYcnt	LAT	LONG
371590022	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	3	Y	Y						Y		Y	0	1	35.5345	-80.6676
371630005	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2							Y	Y	Y	Y	1	1	35.0247	-78.2917
371730002	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	4		Y		Y	Y	Y					0	0	35.4355	-83.4437
371790003	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	1		Y									0	0	34.9739	-80.5408
371830014	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	4		Y		Y	Y	Y					0	0	35.8561	-78.5742
371830015	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	5	Y	Y			Y			Y	Y	Y	1	1	35.7900	-78.6197
371830016	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2		Y						Y		Y	0	1	35.5969	-78.7925
371830017	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	1		Y									0	0	35.6764	-78.5353
371830018	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	1	Y										0	0	35.8428	-78.6797
371890003	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	1					Y						0	0	36.2219	-81.6631
371910005	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2				Y	Y						0	0	35.3692	-77.9939
371990003	0776	NORTH CAROLINA DEPT OF ENVIRONMENT AND NATURAL RESOURCES	2		Y				Y					0	0	35.7377	-82.2852
450010001	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1		Y									0	0	34.3256	-82.3861
450030003	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	3		Y		Y			Y				1	0	33.3422	-81.7886
450030004	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1		Y									0	0	33.6456	-81.3425
450031001	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1			Y								0	0	33.4306	-81.8922
450070003	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	2		Y			Y						0	0	34.7750	-82.4903
450110001	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	4		Y		Y		Y	Y				1	0	33.3203	-81.4653
450130007	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	2			Y		Y						0	0	32.4365	-80.6779
450150002	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1		Y									0	0	32.9872	-79.9367
450190003	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	4			Y	Y		Y	Y				1	0	32.8822	-79.9775
450190005	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1	Y										0	0	32.7939	-79.9467
450190042	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1		Y									0	0	32.9100	-79.9653
450190046	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	5		Y	Y	Y		Y	Y				1	0	32.9408	-79.6569
450190047	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	2			Y	Y							0	0	32.8428	-79.9478
450190048	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1					Y						0	0	32.9800	-80.0653
450190049	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1					Y						0	0	32.7908	-79.9586
450210002	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1		Y									0	0	35.1303	-81.8164
450230002	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1		Y									0	0	34.7925	-81.2036
450250001	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	2		Y			Y						0	0	34.6153	-80.1986
450290002	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	2		Y			Y						0	0	33.0081	-80.9650
450310003	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1		Y									0	0	34.2856	-79.7447
450370001	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	2		Y			Y						0	0	33.7397	-81.8536
450410001	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1			Y								0	0	34.1961	-79.7986
450410002	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1					Y						0	0	34.1672	-79.8503
450430002	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	2			Y	Y							0	0	33.3686	-79.2975
450430006	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	3			Y	Y		Y					0	0	33.3619	-79.2942
450430007	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1			Y								0	0	33.3478	-79.2981
450430009	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	3			Y	Y	Y						0	0	33.3739	-79.2856
450450008	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	5	Y		Y		Y	Y	Y				1	0	34.8386	-82.4028
450450009	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1					Y						0	0	34.8989	-82.3131
450451002	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1				Y							0	0	34.8700	-82.4192
450452002	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1			Y								0	0	34.9397	-82.2294
450470001	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1			Y								0	0	34.1792	-82.1522
450470002	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1			Y								0	0	34.1650	-82.1603
450470003	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1					Y						0	0	34.2131	-82.1731
450490001	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1			Y								0	0	32.8739	-81.1153
450510002	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	2			Y		Y						0	0	33.7022	-78.8772
450590001	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1			Y								0	0	34.5019	-82.0208
450630005	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	2			Y	Y							0	0	33.7839	-81.1197
450630008	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	2					Y	Y					0	0	34.0508	-81.1547
450630009	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1				Y							0	0	33.9733	-81.0525

AIRSSITE	AG_CODE	AGENCY_DES	M_Param	CO	O3	PB	PM10	PMFINE	SO2	NO2	NO	NOX	NOY	NOXcnt	NOYcnt	LAT	LONG
450631002	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1			Y								0	0	33.9689	-81.0653
450730001	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	3		Y			Y	Y					0	0	34.8050	-83.2375
450750002	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1					Y						0	0	33.5299	-80.8668
450770002	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	2		Y			Y						0	0	34.6533	-82.8386
450790006	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1			Y								0	0	34.0053	-81.0231
450790007	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	6		Y	Y	Y	Y	Y	Y				1	0	34.0939	-80.9622
450790014	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1			Y								0	0	33.9831	-81.0194
450790018	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	2				Y	Y						0	0	33.9819	-81.0400
450790019	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	3			Y	Y	Y						0	0	33.9914	-81.0239
450790020	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1	Y										0	0	34.0153	-81.0342
450790021	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	4		Y	Y			Y	Y				1	0	33.8147	-80.7811
450791001	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1		Y									0	0	34.1313	-80.8683
450791003	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	2				Y		Y					0	0	34.0244	-81.0361
450799007	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1			Y								0	0	34.0922	-80.9675
450830001	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	2			Y	Y							0	0	34.9475	-81.9325
450830009	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1		Y									0	0	34.9886	-82.0756
450830010	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1					Y						0	0	34.9267	-82.0050
450850001	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1			Y								0	0	33.9222	-80.3375
450870001	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1		Y									0	0	34.5389	-81.5603
450890001	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1		Y									0	0	33.7236	-79.5650
450910005	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	2			Y	Y							0	0	34.9625	-81.0008
450910006	0971	SOUTH CAROLINA DEPARTMENT HEALTH AND ENVIRONMENTAL CONTROL	1		Y									0	0	34.9356	-81.2283
470010101	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1		Y									0	0	35.9650	-84.2233
470090011	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1					Y						0	0	35.7683	-83.9422
470110103	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1				Y							0	0	35.2781	-84.7539
470111002	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1				Y							0	0	35.1886	-84.8672
470370002	0682	METROPOLITAN HEALTH DEPARTMENT/NASHVILLE & DAVIDSON COUNTY	1				Y							0	0	36.1422	-86.7533
470370006	0682	METROPOLITAN HEALTH DEPARTMENT/NASHVILLE & DAVIDSON COUNTY	1				Y							0	0	36.1767	-86.7936
470370011	0682	METROPOLITAN HEALTH DEPARTMENT/NASHVILLE & DAVIDSON COUNTY	4		Y		Y		Y	Y	Y	Y		1	0	36.2050	-86.7447
470370021	0682	METROPOLITAN HEALTH DEPARTMENT/NASHVILLE & DAVIDSON COUNTY	1	Y										0	0	36.1592	-86.7817
470370023	0682	METROPOLITAN HEALTH DEPARTMENT/NASHVILLE & DAVIDSON COUNTY	2				Y	Y						0	0	36.1764	-86.7389
470370024	0682	METROPOLITAN HEALTH DEPARTMENT/NASHVILLE & DAVIDSON COUNTY	1				Y							0	0	36.1625	-86.8547
470370025	0682	METROPOLITAN HEALTH DEPARTMENT/NASHVILLE & DAVIDSON COUNTY	1					Y						0	0	36.1000	-86.7344
470370026	0682	METROPOLITAN HEALTH DEPARTMENT/NASHVILLE & DAVIDSON COUNTY	1		Y									0	0	36.1506	-86.6211
470370028	0682	METROPOLITAN HEALTH DEPARTMENT/NASHVILLE & DAVIDSON COUNTY	1	Y										0	0	36.1683	-86.6833
470370031	0682	METROPOLITAN HEALTH DEPARTMENT/NASHVILLE & DAVIDSON COUNTY	1	Y										0	0	36.1764	-86.7622
470370036	0682	METROPOLITAN HEALTH DEPARTMENT/NASHVILLE & DAVIDSON COUNTY	1					Y						0	0	35.8044	-86.8772
470450004	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1					Y						0	0	36.0528	-89.3819
470590003	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1				Y							0	0	36.1814	-82.9881
470650006	0170	CHATTANOGA-HAMILTON COUNTY AIR POLLUTION CONTROL	1				Y							0	0	35.0169	-85.3222
470650028	0170	CHATTANOGA-HAMILTON COUNTY AIR POLLUTION CONTROL	1		Y									0	0	35.0764	-85.1517
470650031	0170	CHATTANOGA-HAMILTON COUNTY AIR POLLUTION CONTROL	1					Y						0	0	34.9925	-85.2289
470650032	0170	CHATTANOGA-HAMILTON COUNTY AIR POLLUTION CONTROL	1					Y						0	0	35.1761	-85.2533
470651011	0170	CHATTANOGA-HAMILTON COUNTY AIR POLLUTION CONTROL	1		Y									0	0	35.1403	-85.1700
470654002	0170	CHATTANOGA-HAMILTON COUNTY AIR POLLUTION CONTROL	1					Y						0	0	35.0497	-85.2978
470750003	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1		Y									0	0	35.4681	-89.1678
470890002	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1		Y									0	0	36.1144	-83.6011
470930021	0581	KNOX COUNTY DEPARTMENT OF AIR POLLUTION CONTROL	1		Y									0	0	36.0847	-83.7647
470930022	0581	KNOX COUNTY DEPARTMENT OF AIR POLLUTION CONTROL	1				Y							0	0	35.9692	-83.9111
470930025	0581	KNOX COUNTY DEPARTMENT OF AIR POLLUTION CONTROL	1	Y										0	0	35.9622	-83.9197
470930027	0581	KNOX COUNTY DEPARTMENT OF AIR POLLUTION CONTROL	1			Y								0	0	35.9831	-83.9522
470930028	0581	KNOX COUNTY DEPARTMENT OF AIR POLLUTION CONTROL	1					Y						0	0	35.9436	-84.0389

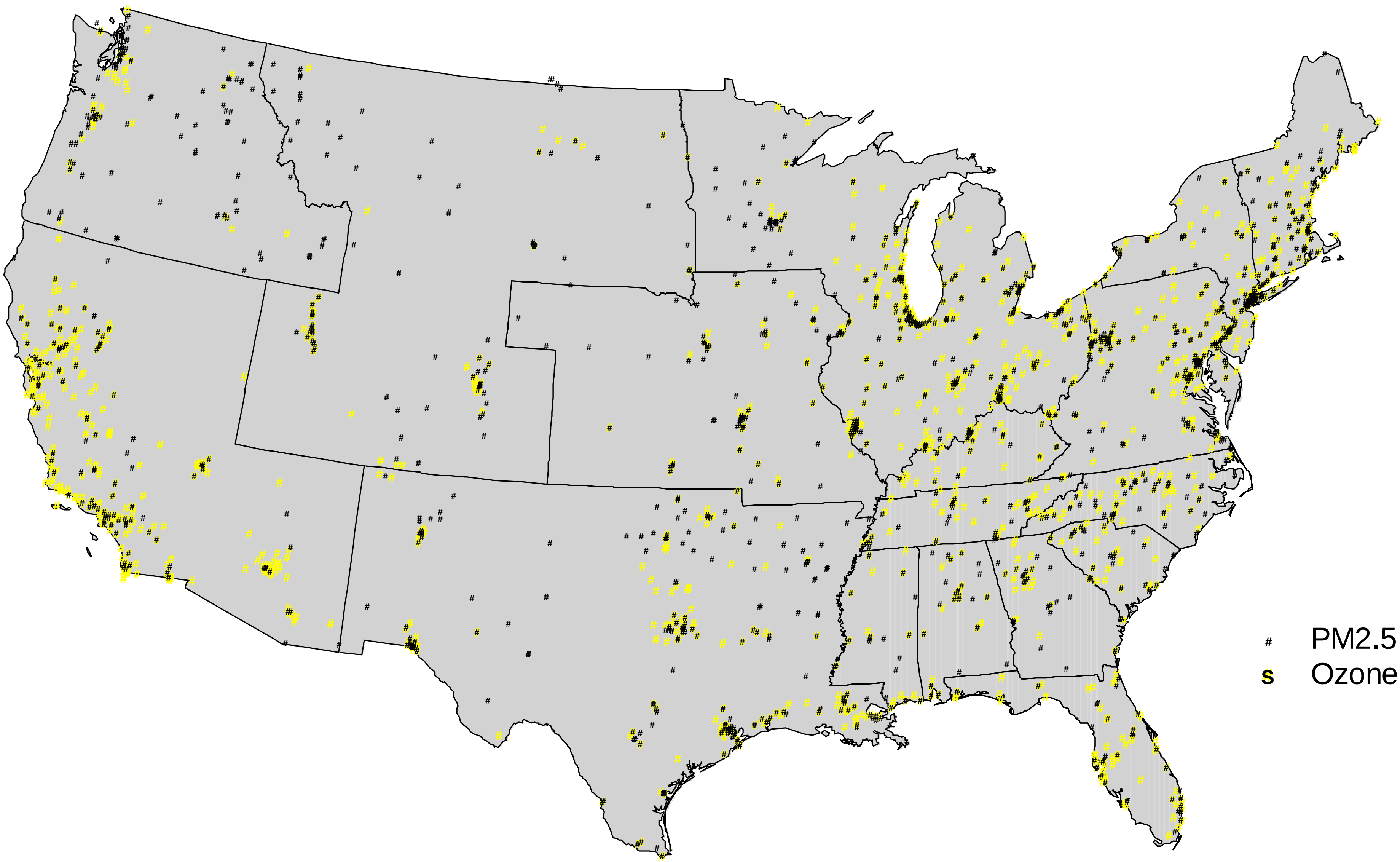
AIRSSITE	AG_CODE	AGENCY_DES	M_Param	CO	O3	PB	PM10	PMFINE	SO2	NO2	NO	NOX	NOY	NOXcnt	NOYcnt	LAT	LONG
470931013	0581	KNOX COUNTY DEPARTMENT OF AIR POLLUTION CONTROL	2				Y	Y						0	0	35.9806	-83.9328
470931017	0581	KNOX COUNTY DEPARTMENT OF AIR POLLUTION CONTROL	3			Y	Y	Y						0	0	35.9750	-83.9544
470931020	0581	KNOX COUNTY DEPARTMENT OF AIR POLLUTION CONTROL	2		Y			Y						0	0	36.0181	-83.8761
470990002	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	2		Y			Y						0	0	35.1161	-87.4700
471071002	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1					Y						0	0	35.4511	-84.5992
471130003	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1				Y							0	0	35.6375	-88.8344
471130004	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1					Y						0	0	35.6097	-88.8156
471192007	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1					Y						0	0	35.6436	-87.0131
471210104	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1		Y									0	0	35.2889	-84.9461
471251009	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1					Y						0	0	36.5144	-87.3278
471390003	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1						Y					0	0	35.0261	-84.3847
471390007	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1						Y					0	0	34.9883	-84.3717
471410001	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1					Y						0	0	36.1736	-85.5094
471450004	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1					Y						0	0	35.9314	-84.5525
471450103	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1				Y							0	0	35.8681	-84.6983
471450104	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1				Y							0	0	35.8731	-84.6897
471490101	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	2		Y						Y	Y		1	0	35.7328	-86.5989
471570014	0673	MEMPHIS-SHELBY COUNTY HEALTH DEPARTMENT	1					Y						0	0	35.0858	-89.9494
471570016	0673	MEMPHIS-SHELBY COUNTY HEALTH DEPARTMENT	1				Y							0	0	35.1644	-89.9708
471570021	0673	MEMPHIS-SHELBY COUNTY HEALTH DEPARTMENT	1		Y									0	0	35.2175	-90.0194
471570024	0673	MEMPHIS-SHELBY COUNTY HEALTH DEPARTMENT	3	Y			Y			Y				1	0	35.1508	-90.0414
471570034	0673	MEMPHIS-SHELBY COUNTY HEALTH DEPARTMENT	2	Y					Y					0	0	35.1419	-90.0838
471570036	0673	MEMPHIS-SHELBY COUNTY HEALTH DEPARTMENT	1	Y										0	0	35.1256	-89.9836
471570038	0673	MEMPHIS-SHELBY COUNTY HEALTH DEPARTMENT	1					Y						0	0	35.1842	-89.9303
471570044	0673	MEMPHIS-SHELBY COUNTY HEALTH DEPARTMENT	1			Y								0	0	35.0875	-90.0725
471570045	0673	MEMPHIS-SHELBY COUNTY HEALTH DEPARTMENT	1			Y								0	0	35.0864	-90.0717
471570046	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	2				Y		Y					0	0	35.2728	-89.9614
471570047	0673	MEMPHIS-SHELBY COUNTY HEALTH DEPARTMENT	1					Y						0	0	35.2067	-90.0264
471571004	0673	MEMPHIS-SHELBY COUNTY HEALTH DEPARTMENT	2		Y			Y						0	0	35.3772	-89.8322
471631007	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1					Y						0	0	36.5394	-82.5200
471632002	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1		Y									0	0	36.5411	-82.4261
471632003	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1		Y									0	0	36.5822	-82.4858
471650007	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	3		Y			Y			Y	Y		1	0	36.2978	-86.6528
471650101	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1		Y									0	0	36.4539	-86.5642
471730107	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1				Y							0	0	36.2242	-83.7144
471870100	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1			Y								0	0	35.8022	-86.6603
471870104	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1			Y								0	0	35.8017	-86.6586
471870106	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1		Y									0	0	35.9519	-87.1372
471890103	1025	TENNESSEE DIVISION OF AIR POLLUTION CONTROL	1		Y									0	0	36.0603	-86.2861

Appendix B-3

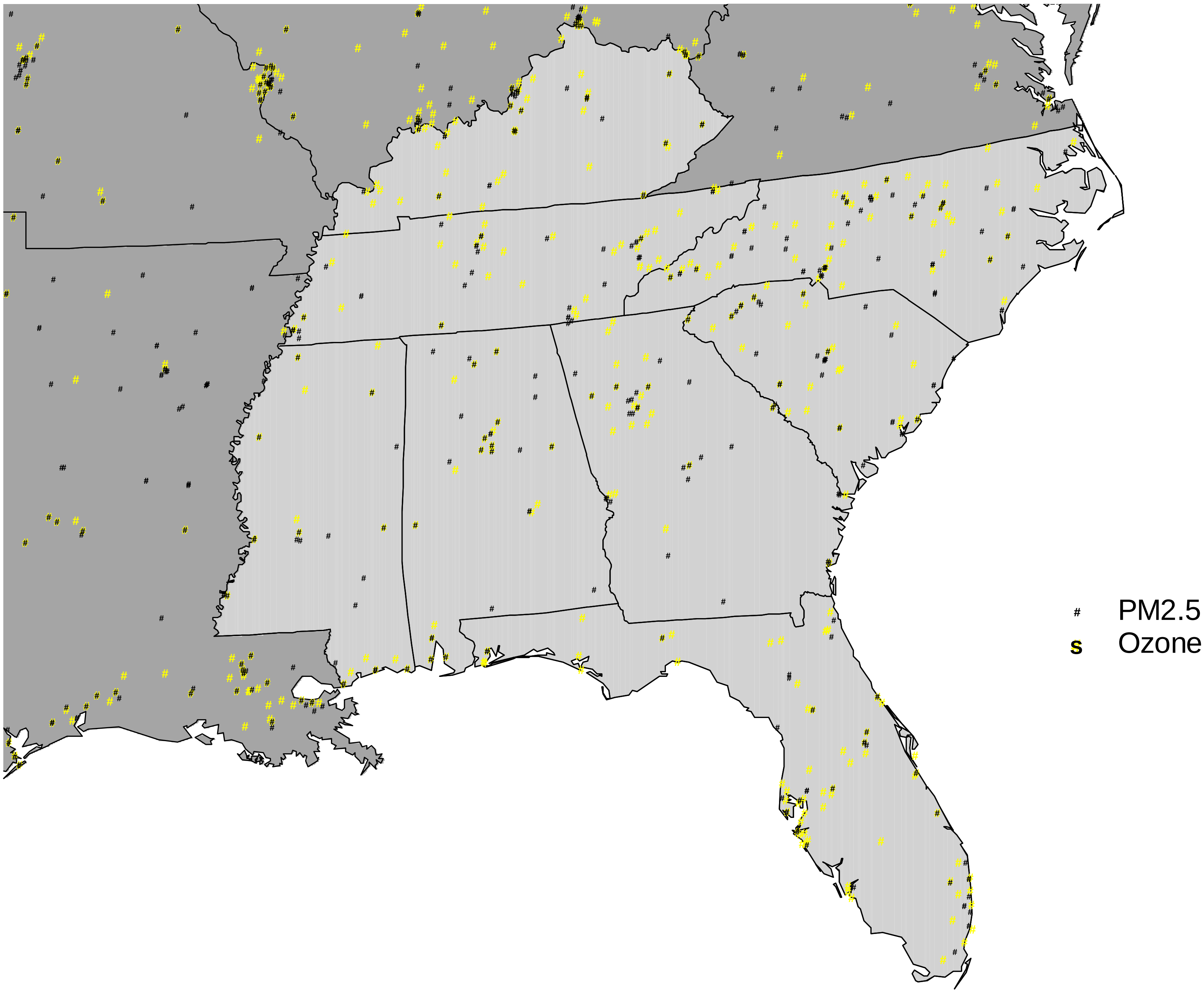
Assessment of Current Region 4 Network

Supporting documentation for Section IV. (C)
Network Assessments for Ozone & $PM_{2.5}$

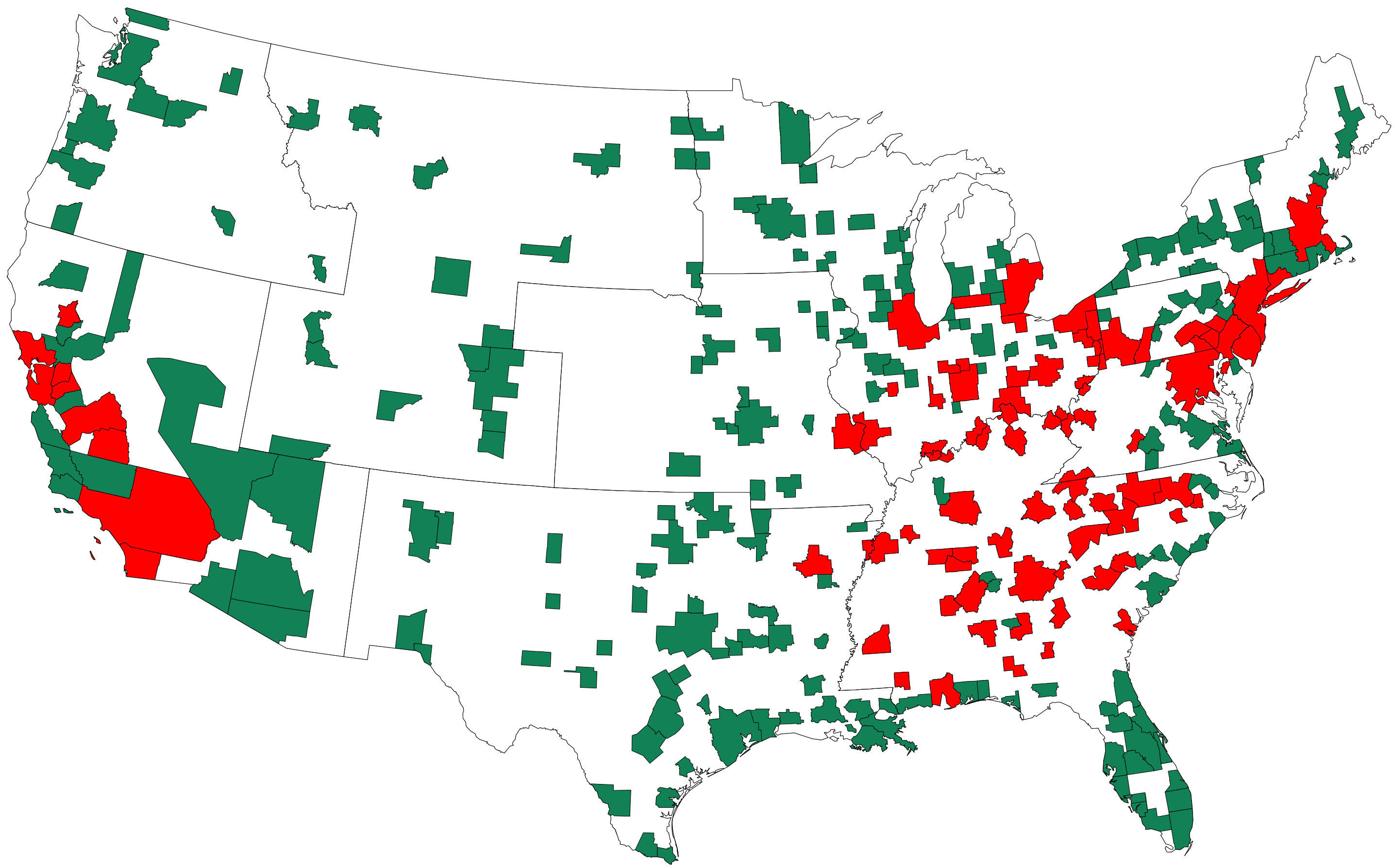
National Ozone and PM2.5 Networks



Region 4 Ozone and PM2.5 Networks



MSAs Violating PM2.5 NAAQS (1999-2001)

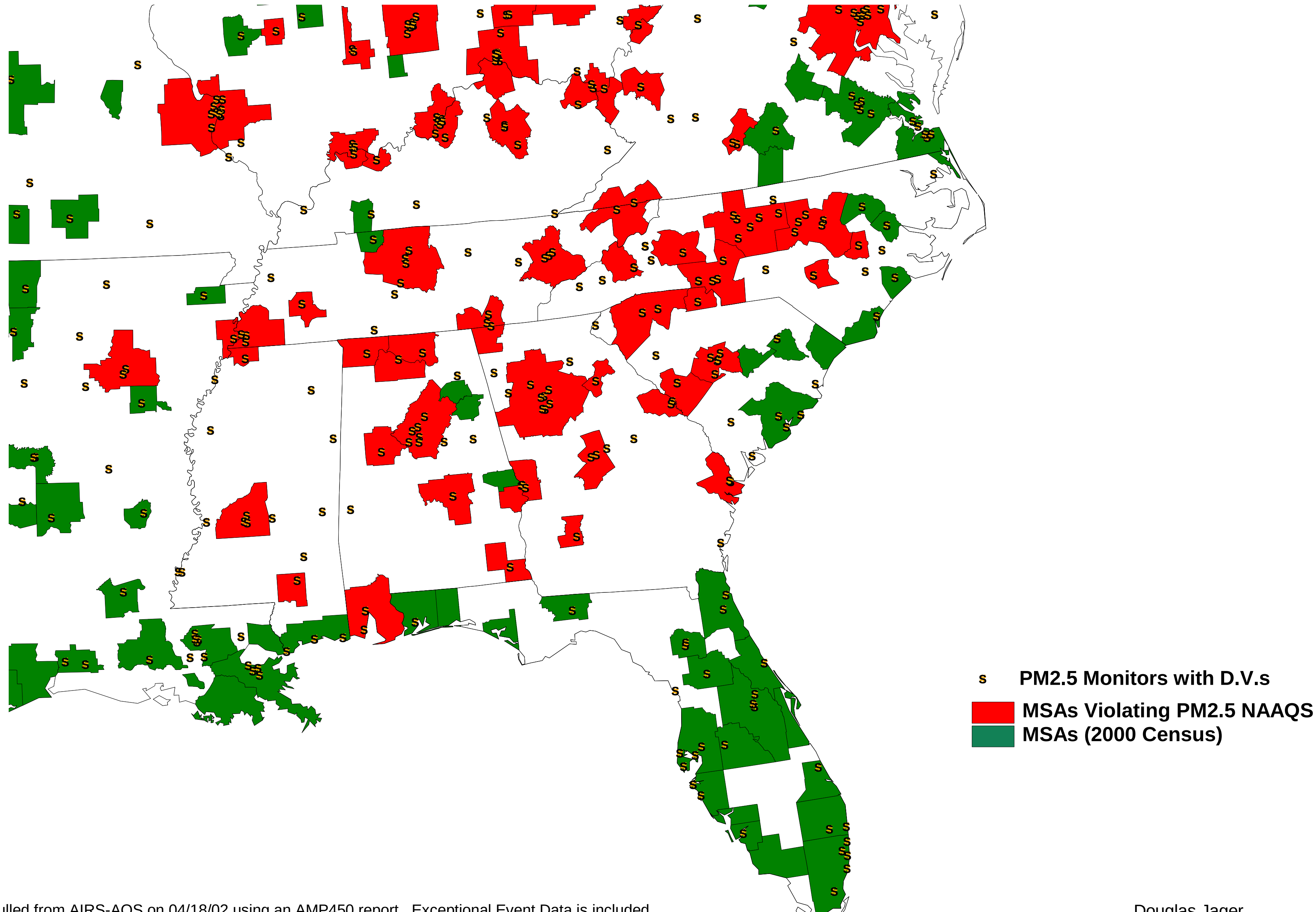


MSAs Violating PM2.5 NAAQS
MSAs (2000 Census)

Data was pulled from AIRS-AQS on 04/18/02 using an AMP450 report. Exceptional Event Data is included.
MSAs were queried as to being in violation or not based on whether a monitor's lat. and long. were contained within the MSA. Annual PM2.5 STD used.

Douglas Jager
Environmental Scientist
US EPA, Region4, APTMD

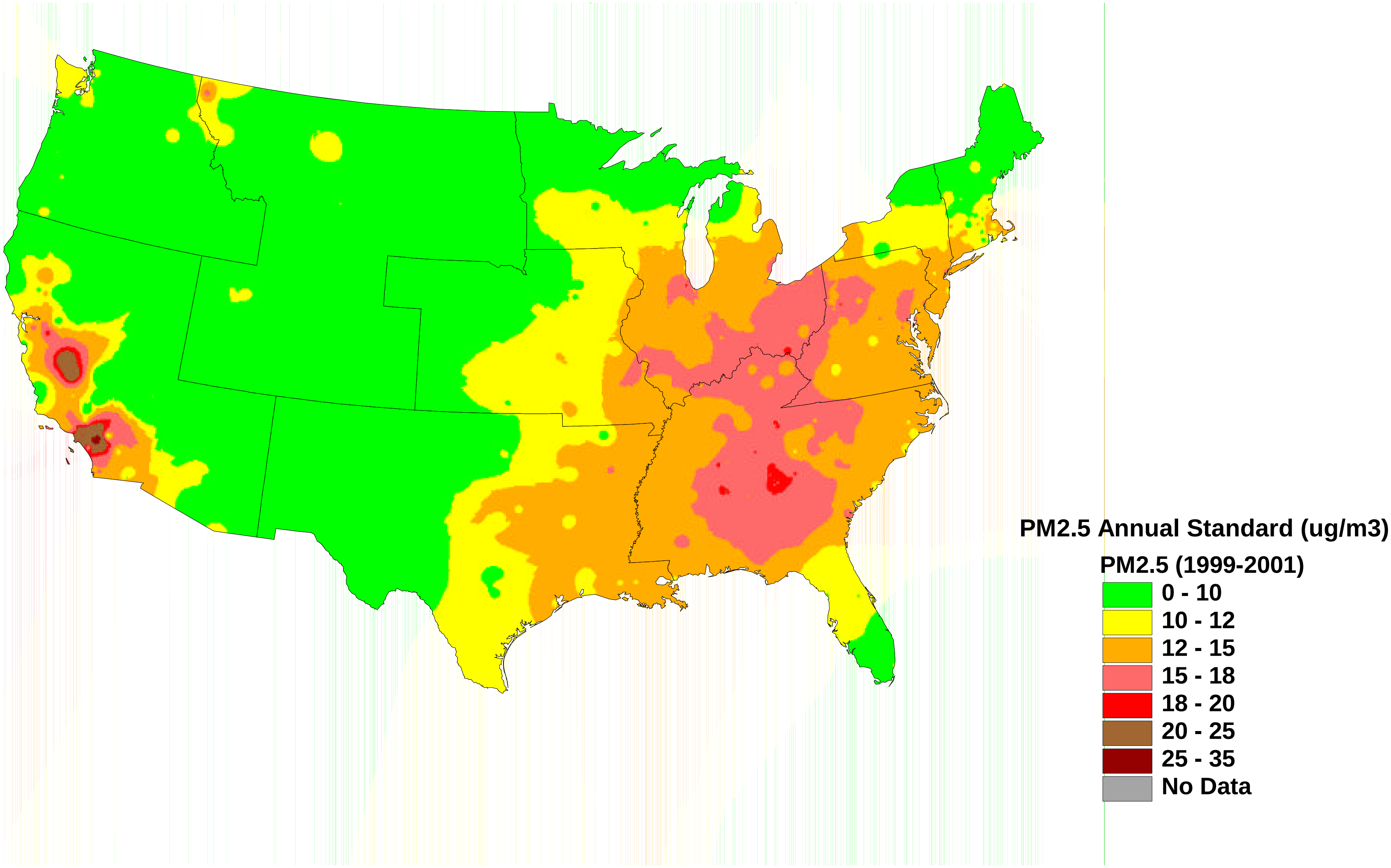
MSAs Violating PM2.5 NAAQS (1999-2001)



Data was pulled from AIRS-AQS on 04/18/02 using an AMP450 report. Exceptional Event Data is included.
MSAs were queried as to being in violation or not based on whether a monitor's lat. and long. were contained within the MSA. Annual PM2.5 STD used.

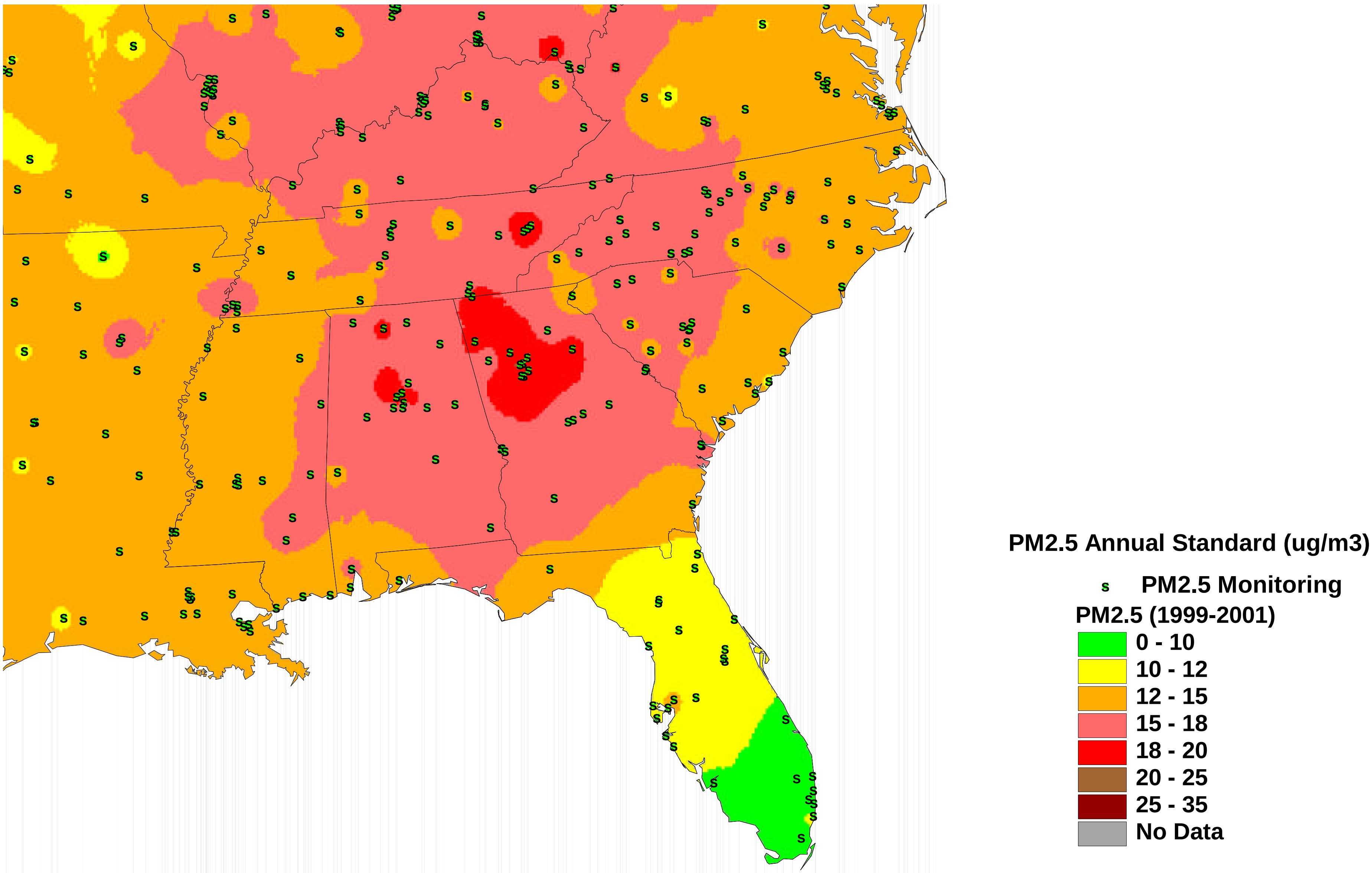
Douglas Jager
Environmental Scientist
US EPA, Region4, APTMD

Interpolated PM2.5 Design Values (99-01)



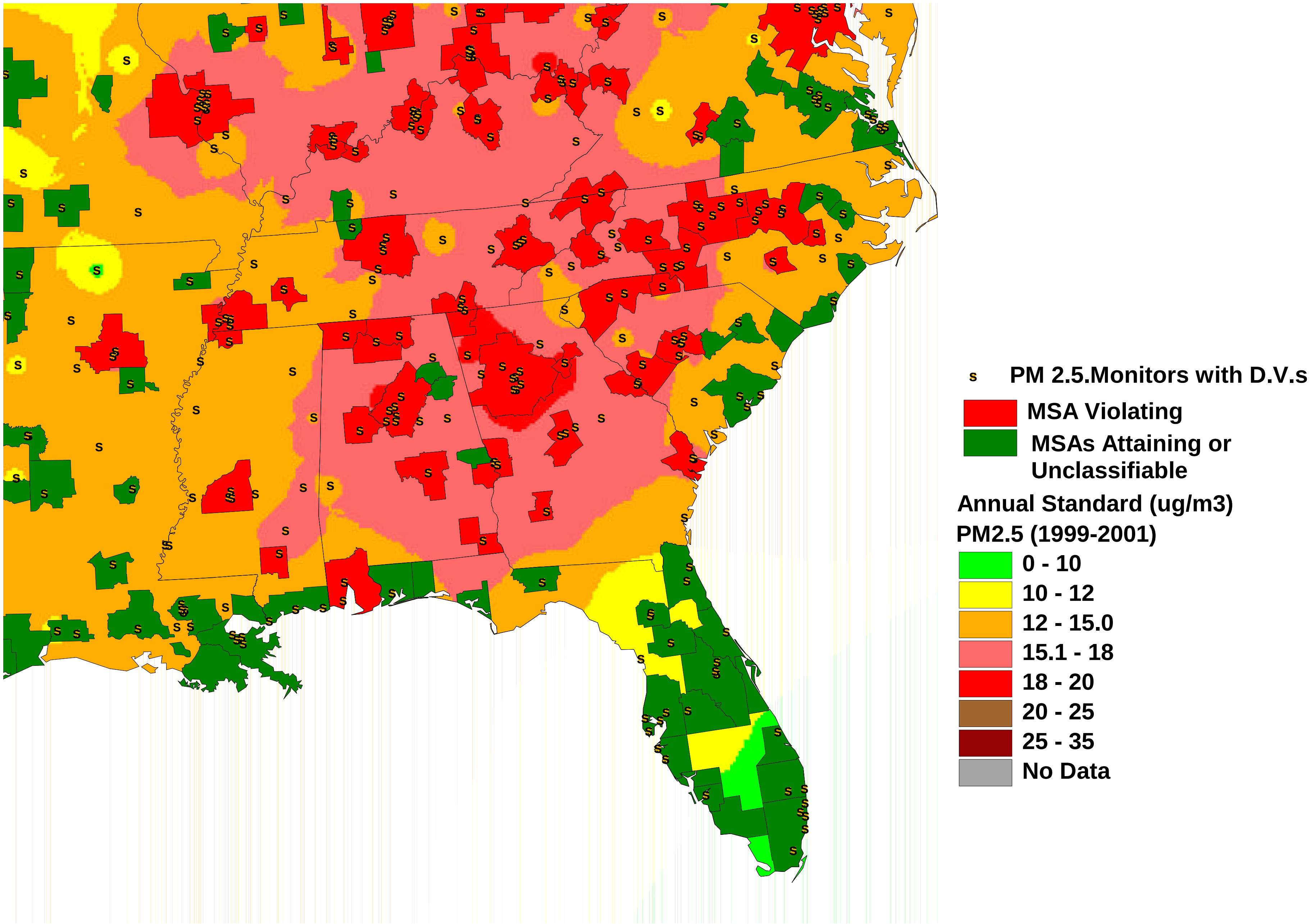
Data was pulled from AIRS-AQS on 04/18/02 using an AMP450 report. Exceptional Event Data is included. Annual PM2.5 STD used.

Interpolated PM2.5 Design Values (99-01)



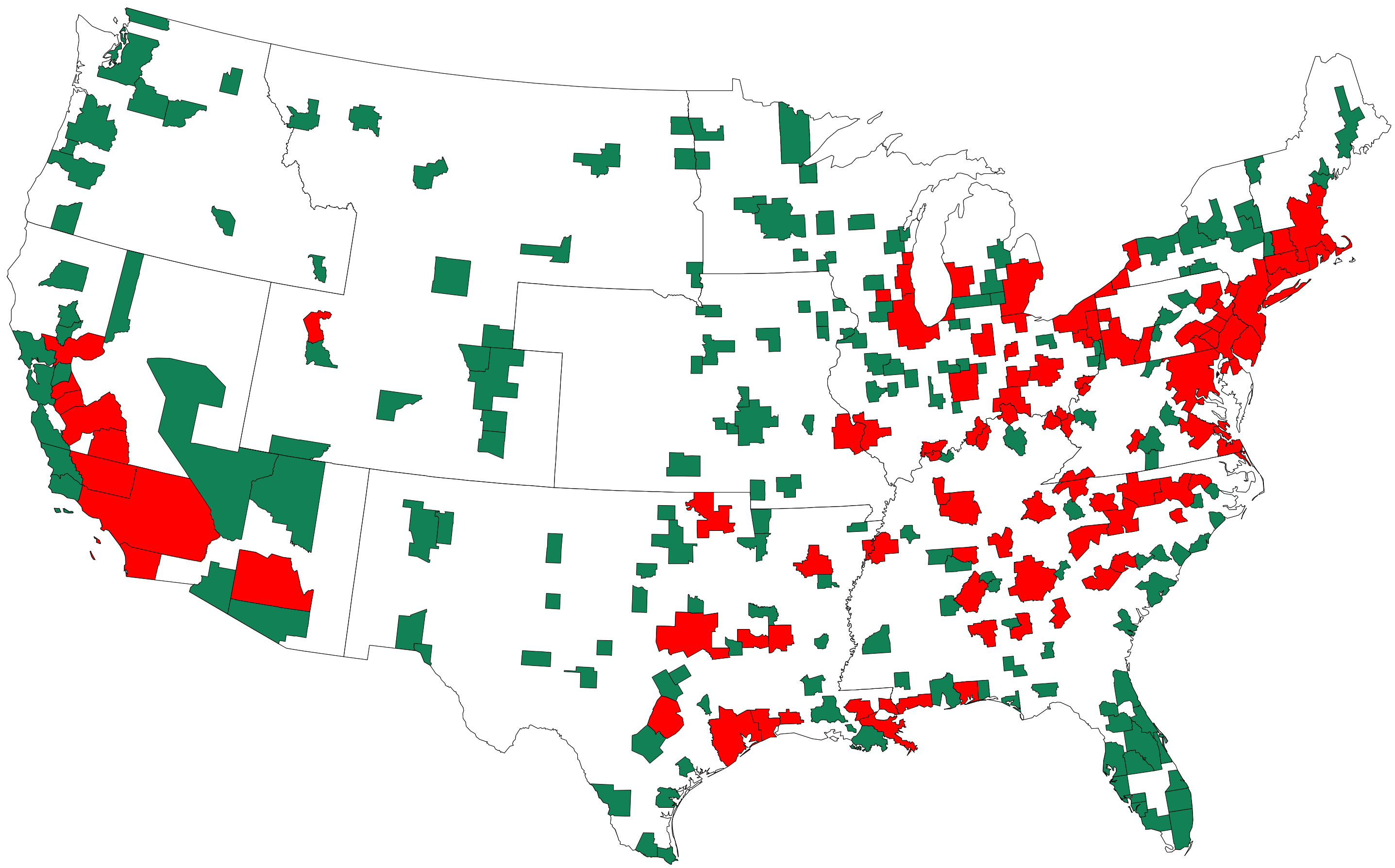
Data was pulled from AIRS-AQS on 04/18/02 using an AMP450 report. Exceptional Event Data is included. Annual PM2.5 STD used.

Interpolated PM2.5 Design Values (99-01)



Data was pulled from AIRS-AQS on 04/18/02 using an AMP450 report. Exceptional Event Data is included. Annual PM2.5 STD used.

MSAs Violating 8-Hr Ozone NAAQS (1999-2001)

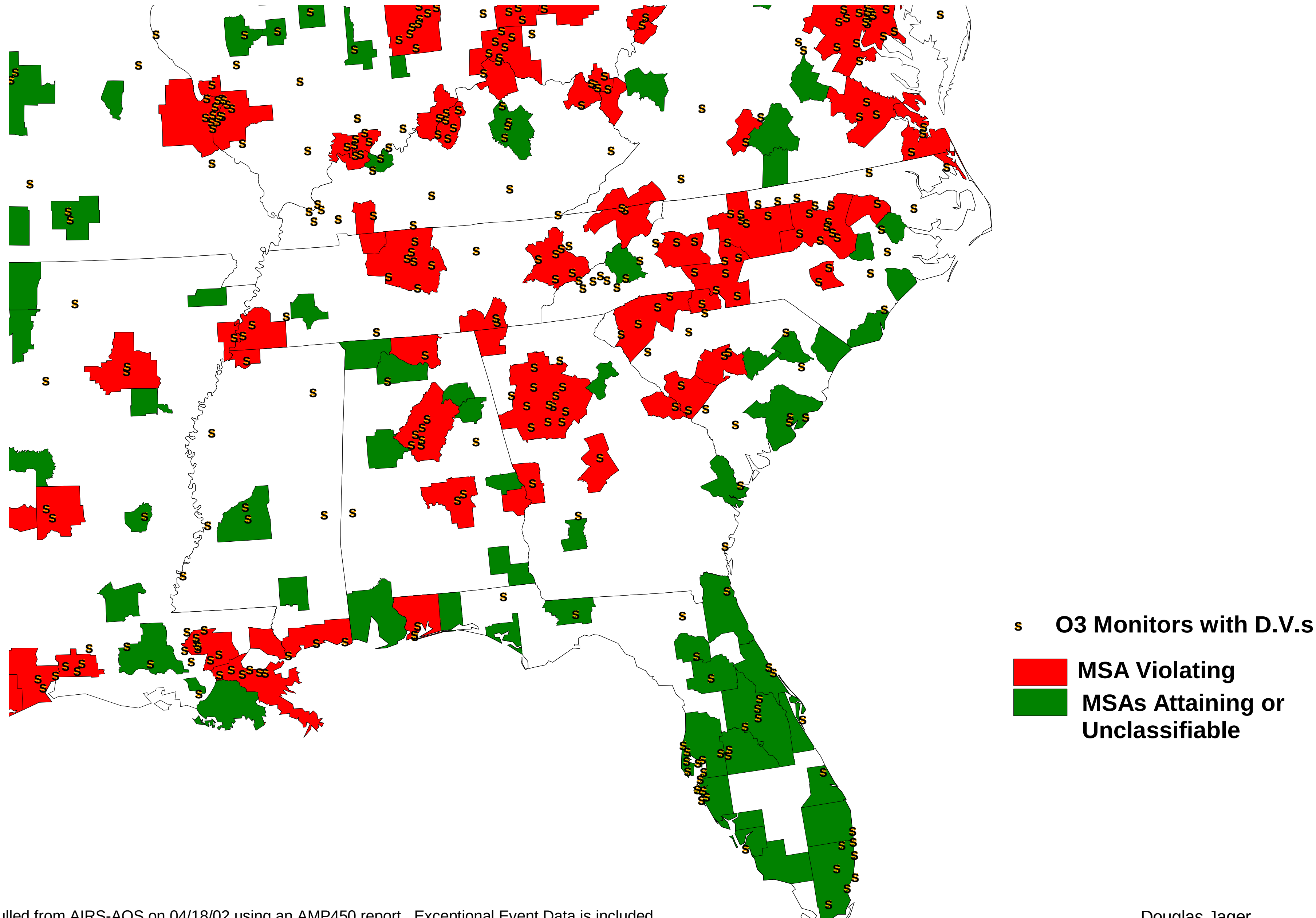


MSAs Violating 8-Hr O3 NAAQS
MSAs (2000 Census)

Data was pulled from AIRS-AQS on 04/18/02 using an AMP450 report. Exceptional Event Data is included.
MSAs were queried as to being in violation or not based on whether a monitor's lat. and long. were contained within the MSA.

Douglas Jager
Environmental Scientist
US EPA, Region4, APTMD

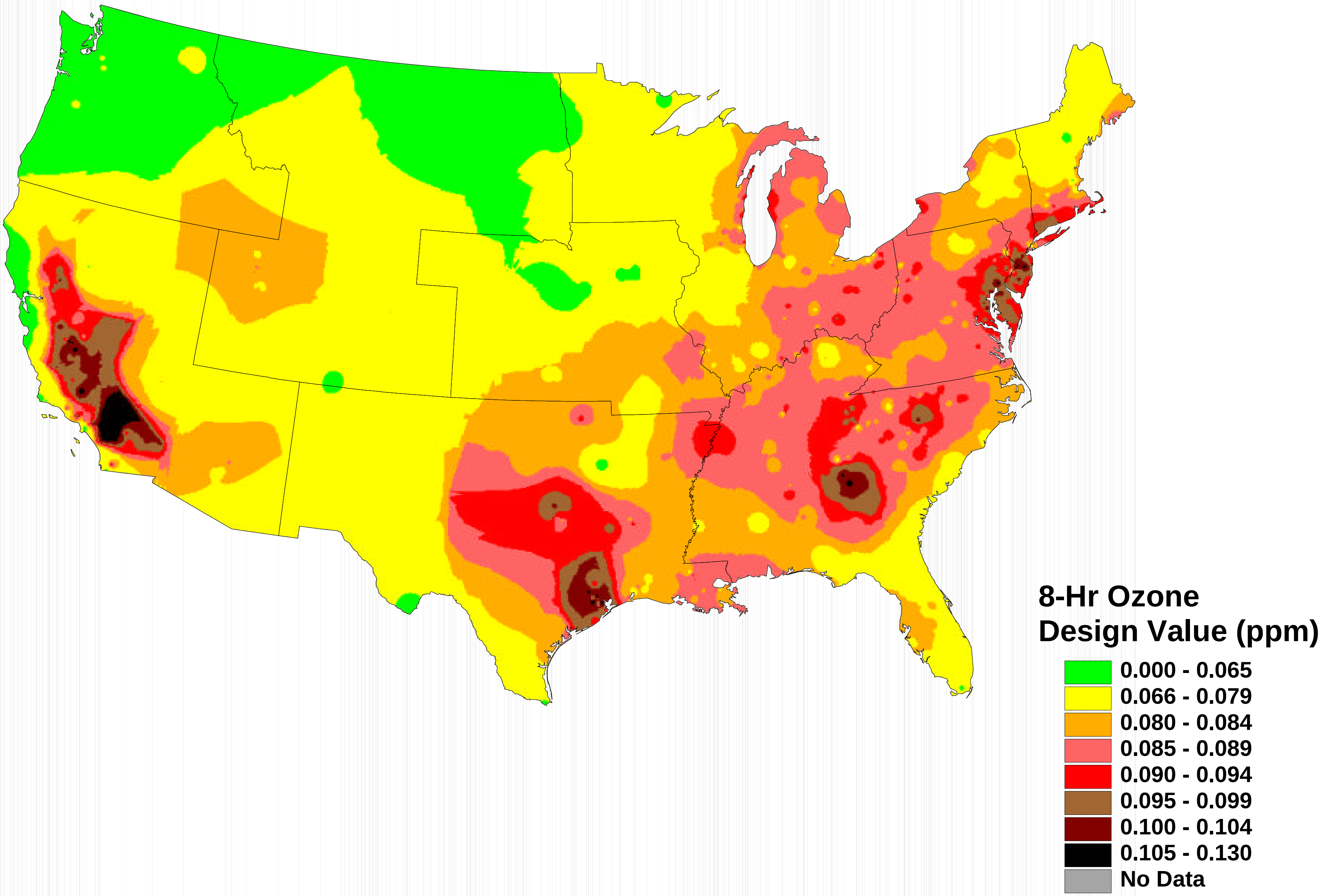
MSAs Violating 8-Hr Ozone NAAQS (1999-2001)



Data was pulled from AIRS-AQS on 04/18/02 using an AMP450 report. Exceptional Event Data is included.
MSAs were queried as to being in violation or not based on whether a monitor's lat. and long. were contained within the MSA. Annual PM2.5 STD used.

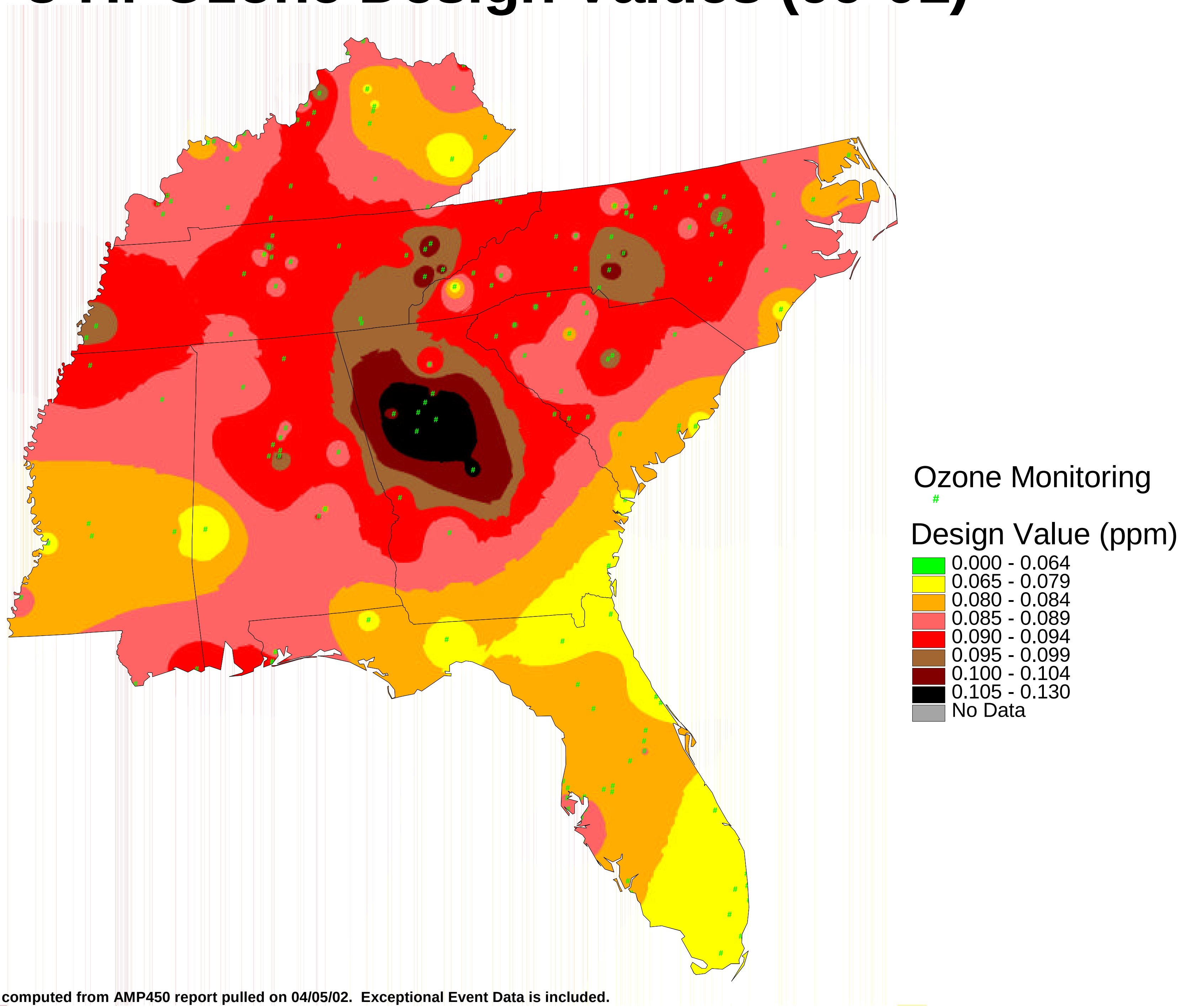
Douglas Jager
Environmental Scientist
US EPA, Region4, APTMD

Interpolated 8-Hr Ozone Design Values (99-01)



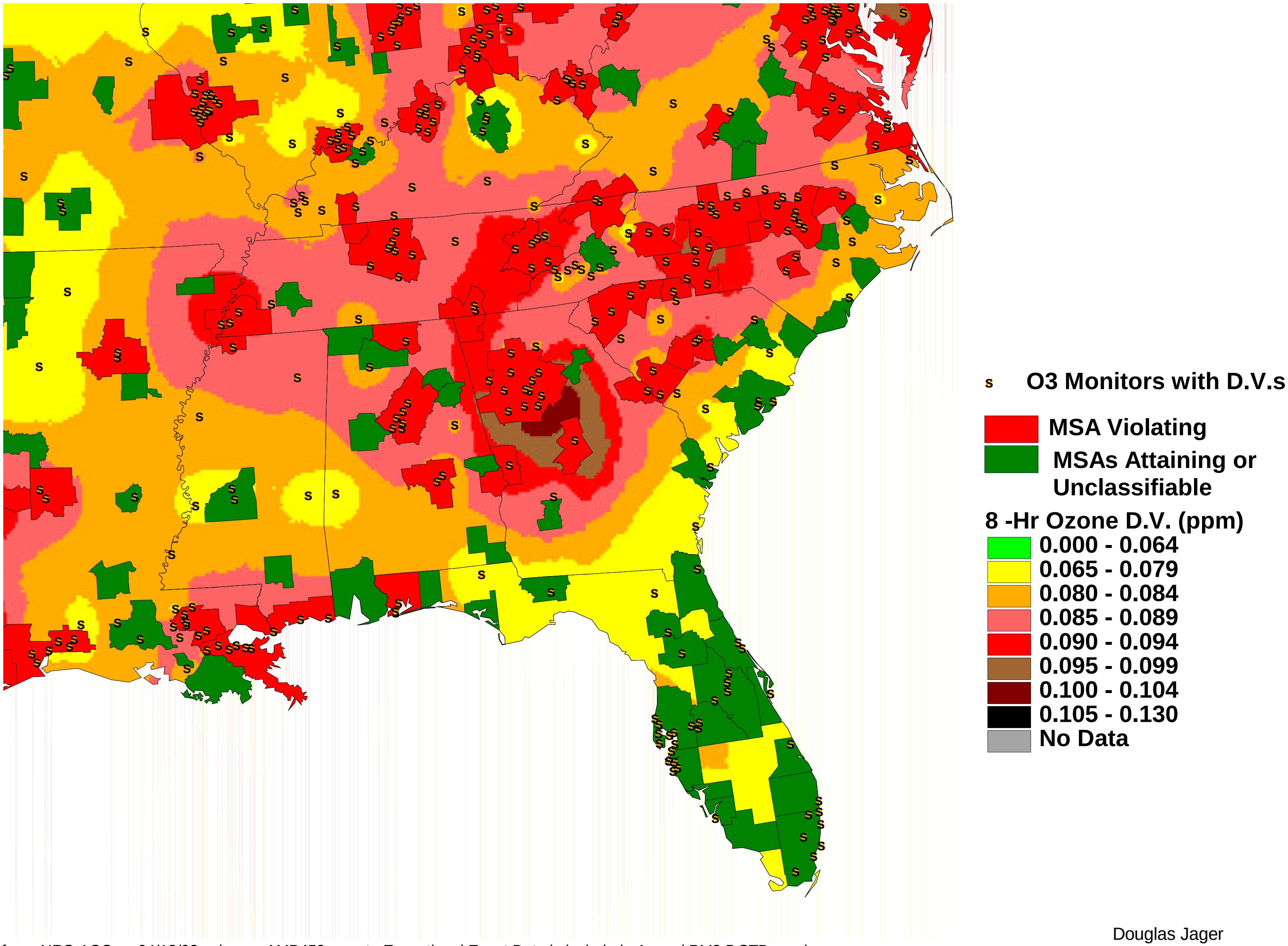
Data was pulled from AIRS-AQS on 04/18/02 using an AMP450 report. Exceptional Event Data is included.
Data is interpolated to a 5km grid.

8-Hr Ozone Design Values (99-01)



8-Hr Ozone Design Values computed from AMP450 report pulled on 04/05/02. Exceptional Event Data is included.

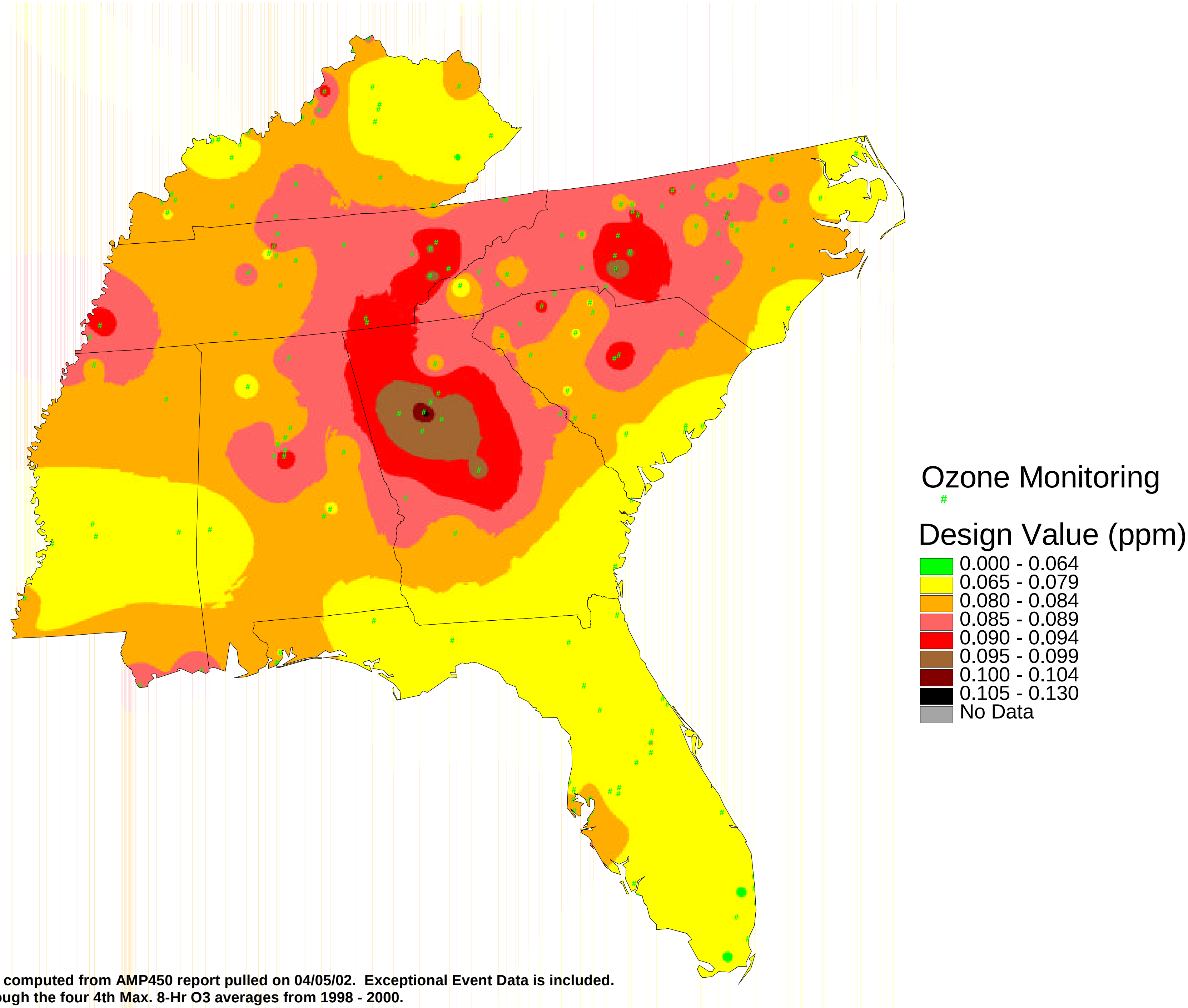
Interpolated 8-Hr O3 Design Values (99-01)



Data was pulled from AIRS-AQS on 04/18/02 using an AMP450 report. Exceptional Event Data is included. Annual PM2.5 STD used.

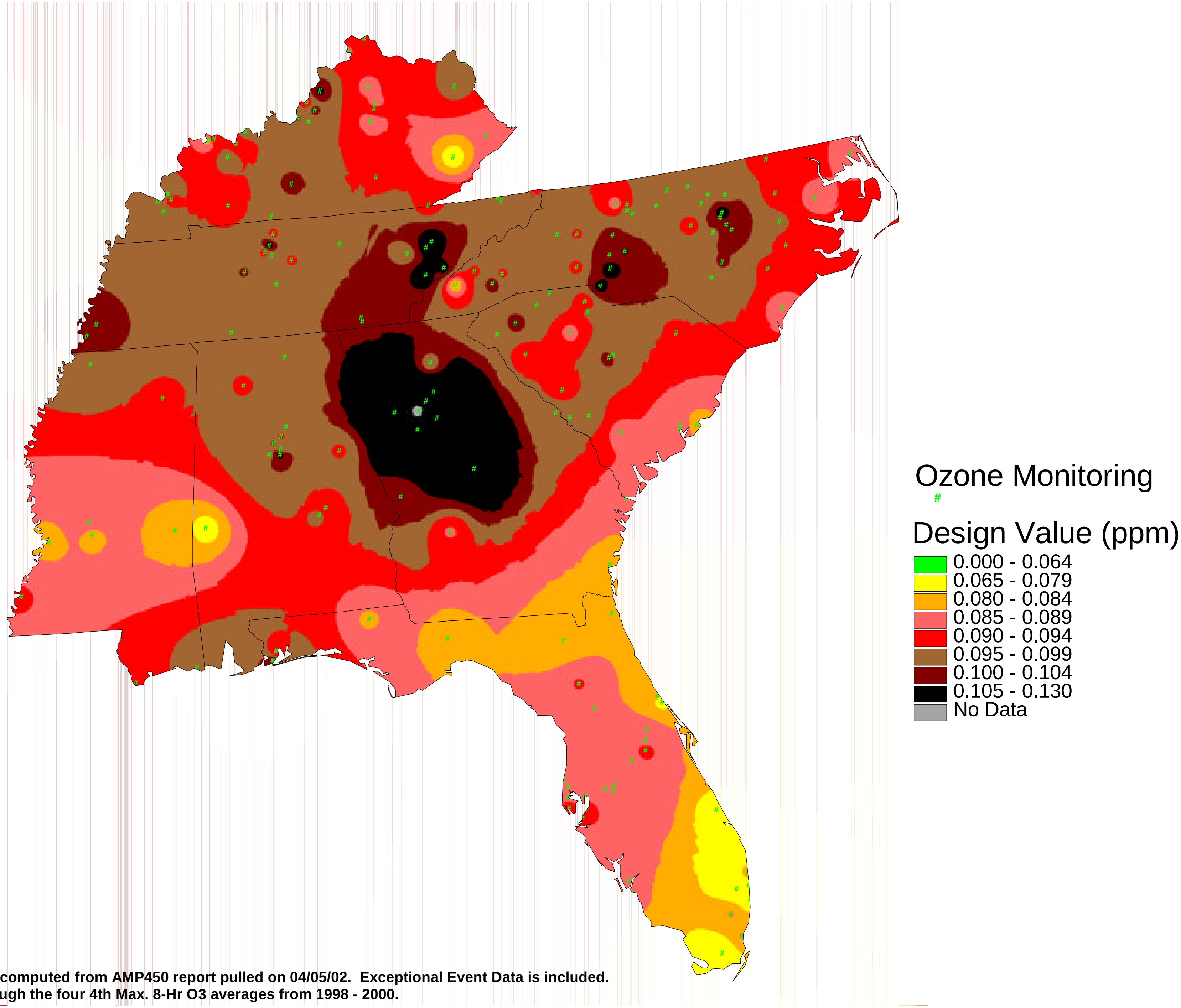
Douglas Jager
Environmental Scientist
US EPA, Region4, APTMD

8-Hr Ozone Design Values (99-01) Less 1 Std. Dev.



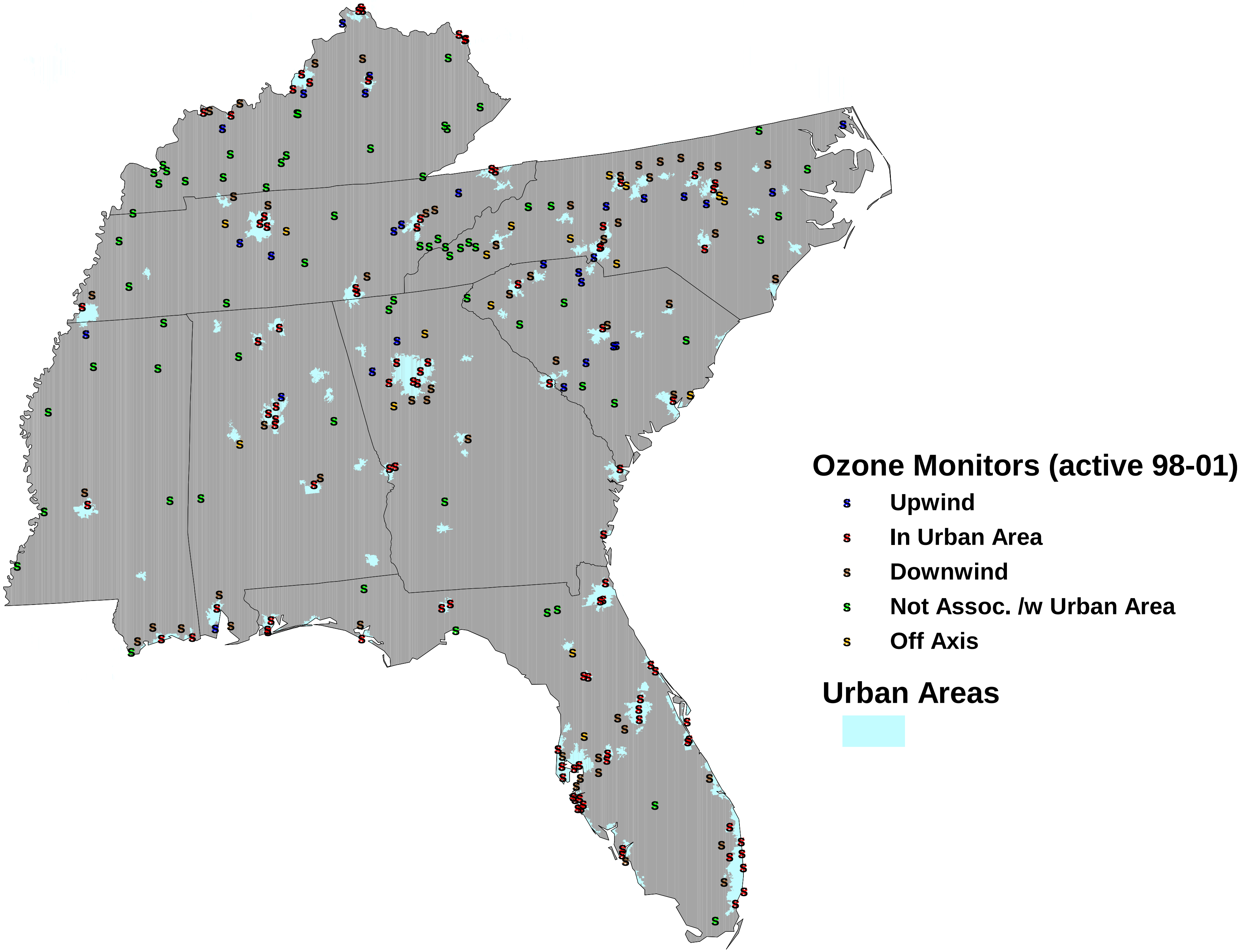
8-Hr Ozone Design Values computed from AMP450 report pulled on 04/05/02. Exceptional Event Data is included.
Std. Dev. is computed through the four 4th Max. 8-Hr O3 averages from 1998 - 2000.

8-Hr Ozone Design Values (99-01) plus 1 Std. Dev.



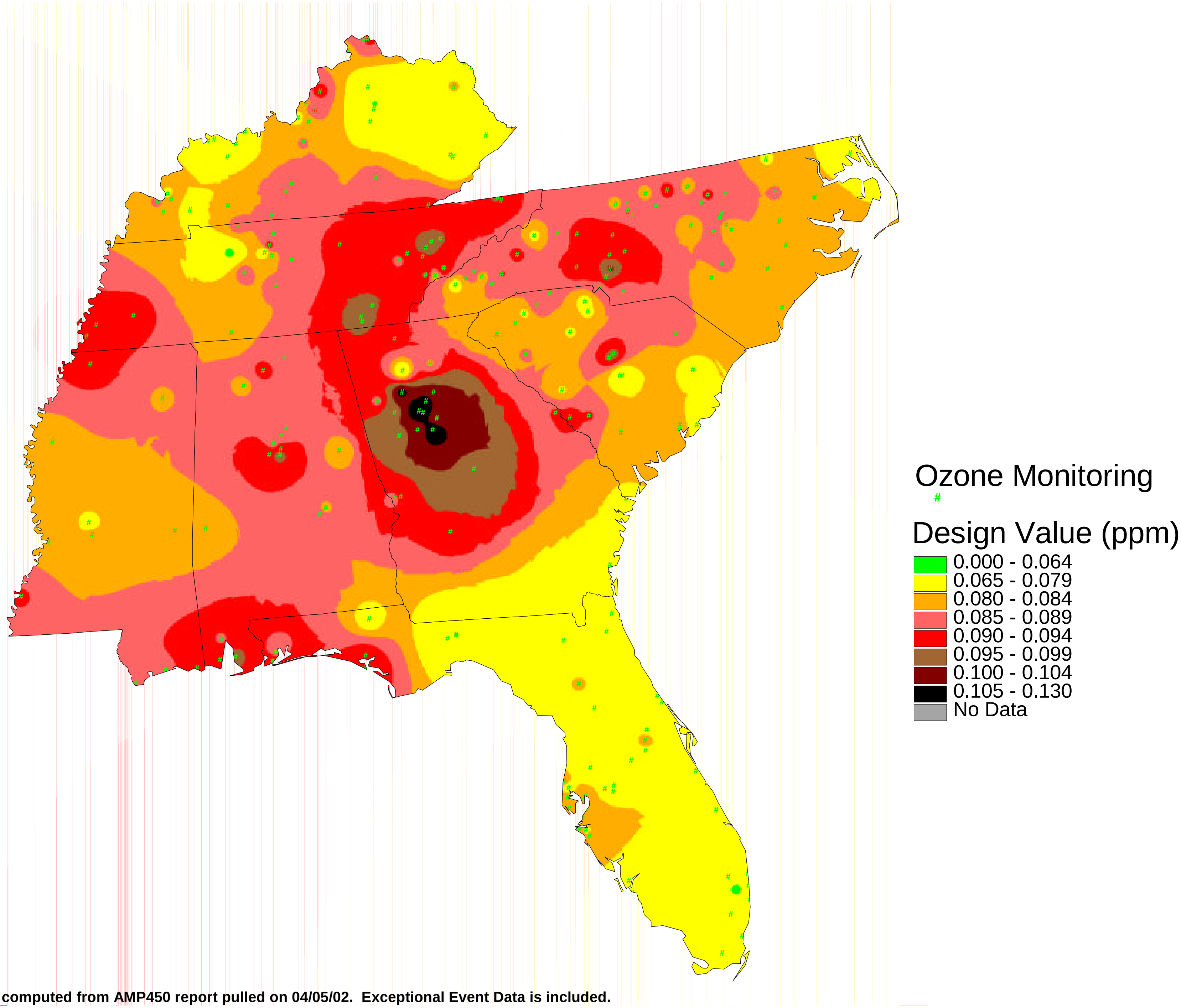
8-Hr Ozone Design Values computed from AMP450 report pulled on 04/05/02. Exceptional Event Data is included.
Std. Dev. is computed through the four 4th Max. 8-Hr O3 averages from 1998 - 2000.

Region 4 Ozone Monitoring Network



Data Pulled from New AQS on 04/05/02. Report used was an AMP450 including exceptional event data.

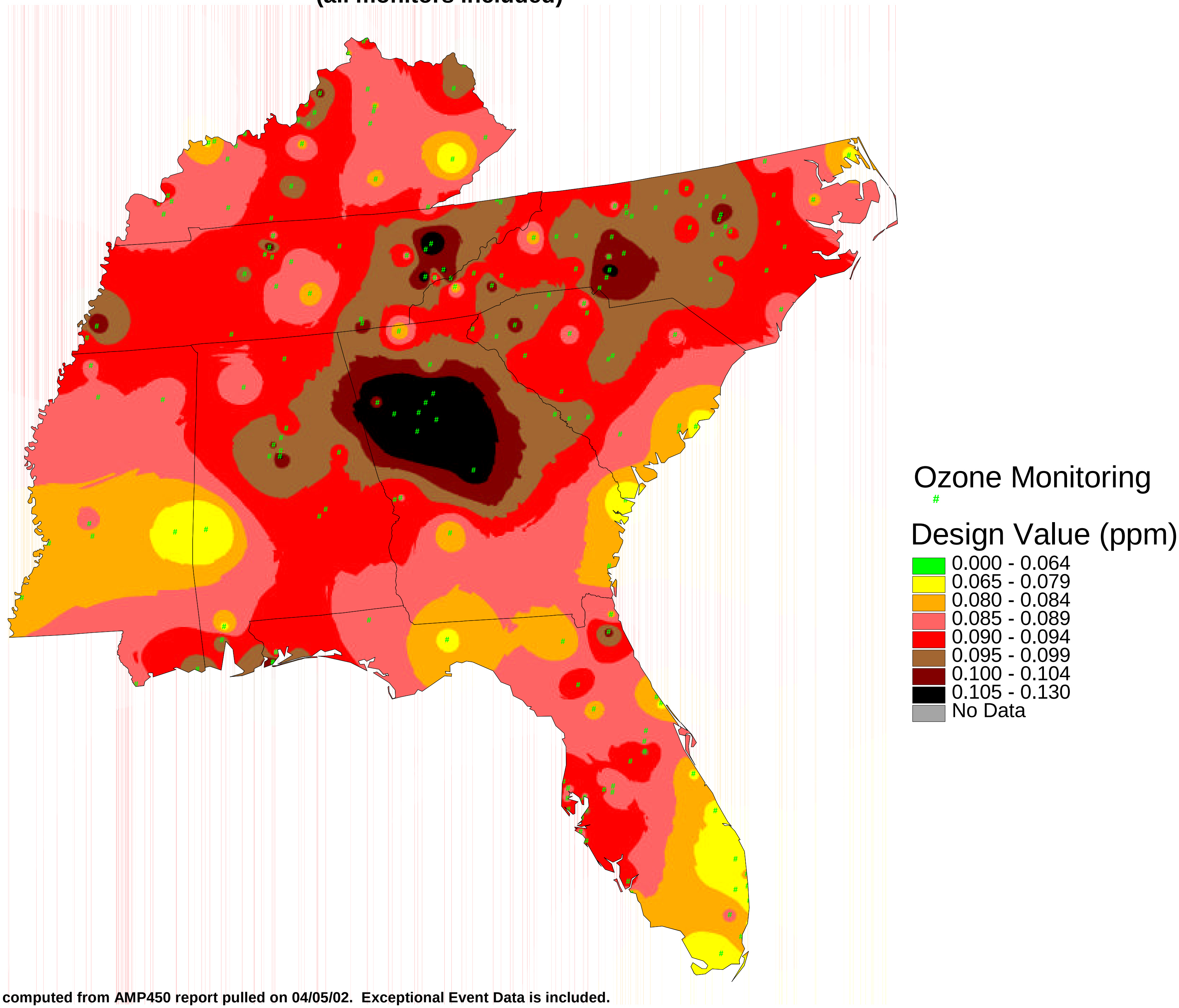
8-Hr Ozone 4th Max for 2000



8-Hr Ozone Design Values computed from AMP450 report pulled on 04/05/02. Exceptional Event Data is included.

8-Hr Ozone 4th Max for 1998

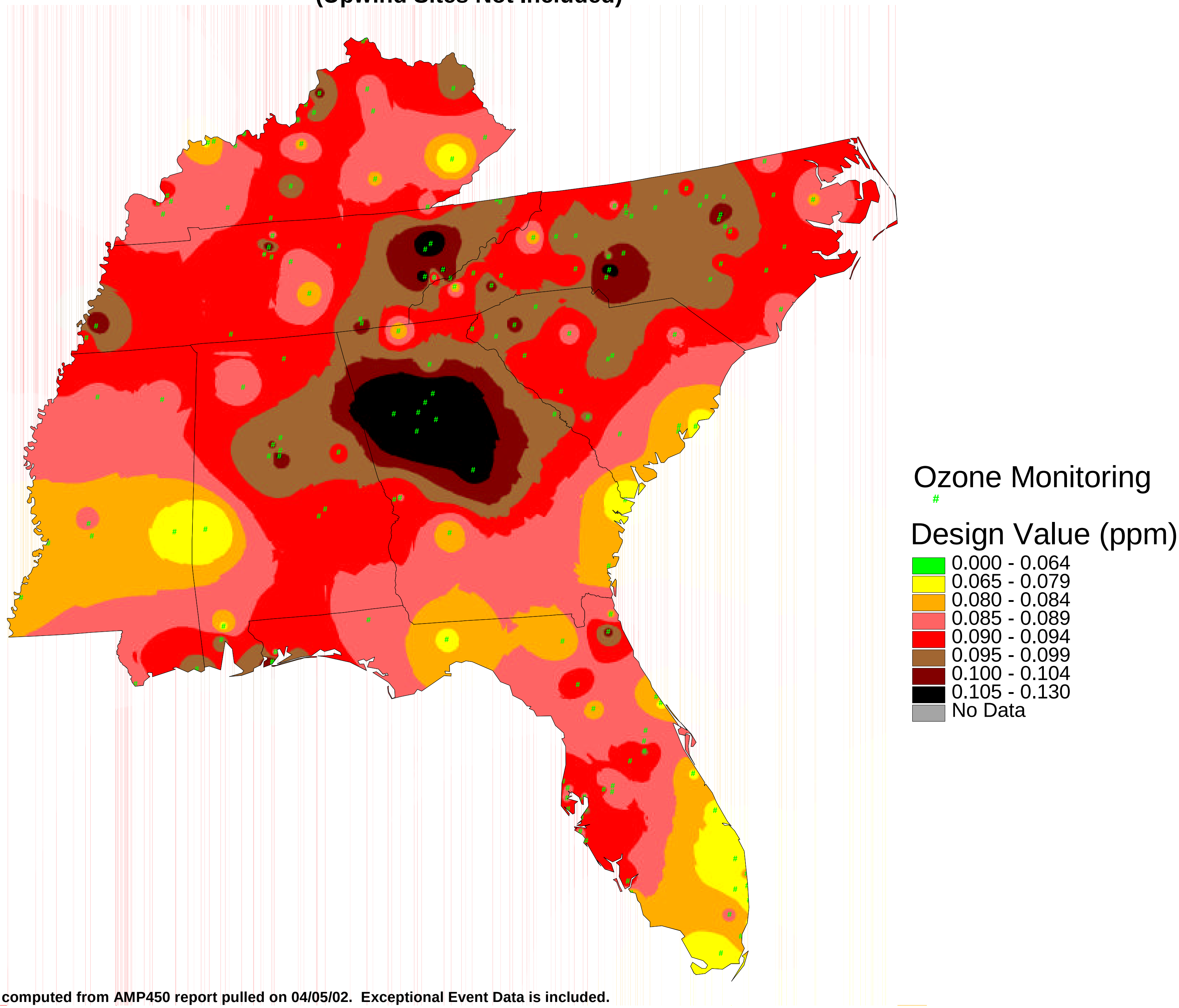
(all monitors included)



8-Hr Ozone Design Values computed from AMP450 report pulled on 04/05/02. Exceptional Event Data is included.

8-Hr Ozone 4th Max for 1998

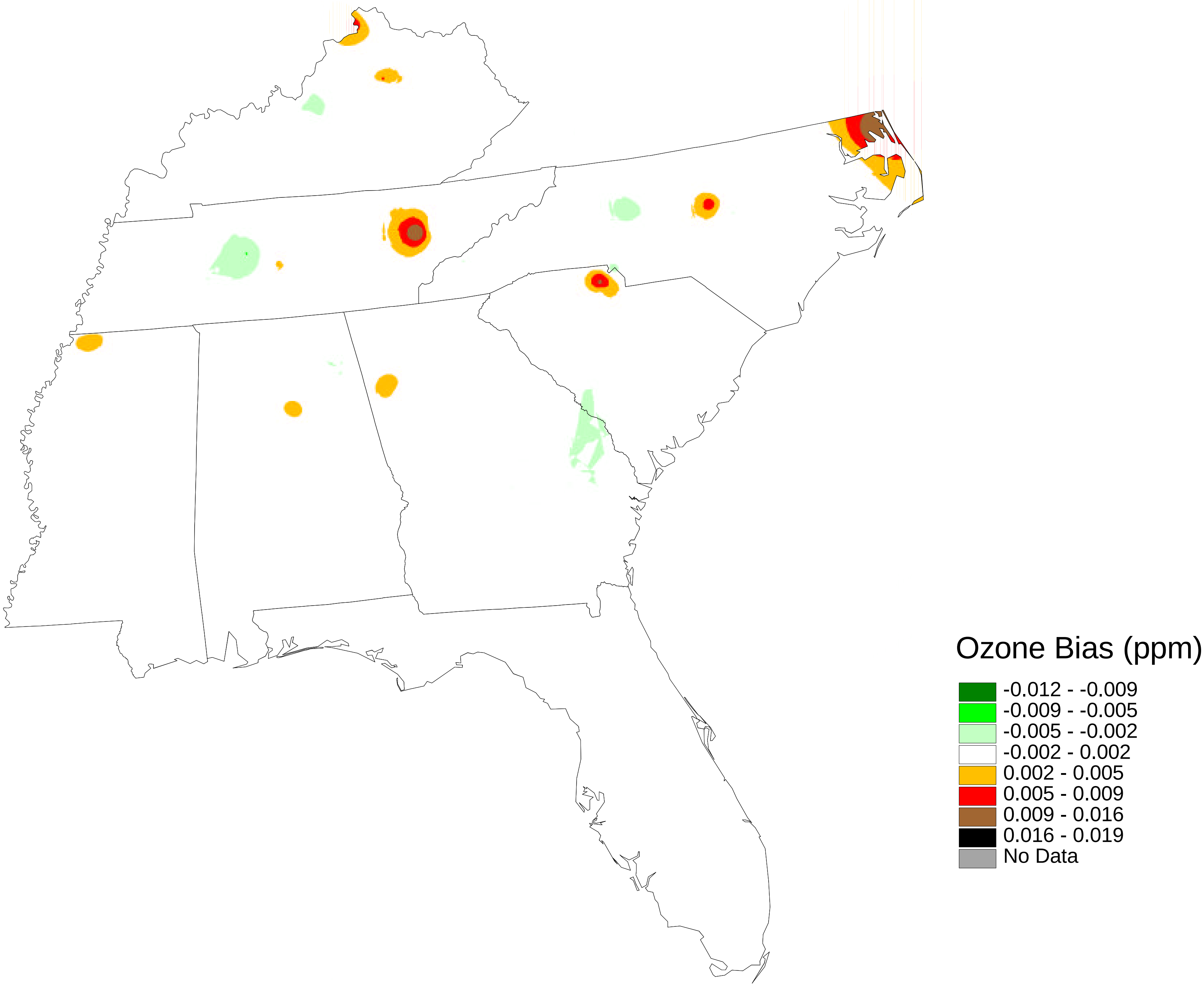
(Upwind Sites Not Included)



8-Hr Ozone Design Values computed from AMP450 report pulled on 04/05/02. Exceptional Event Data is included.

Bias in 8-Hr Ozone 4th Max for 1998

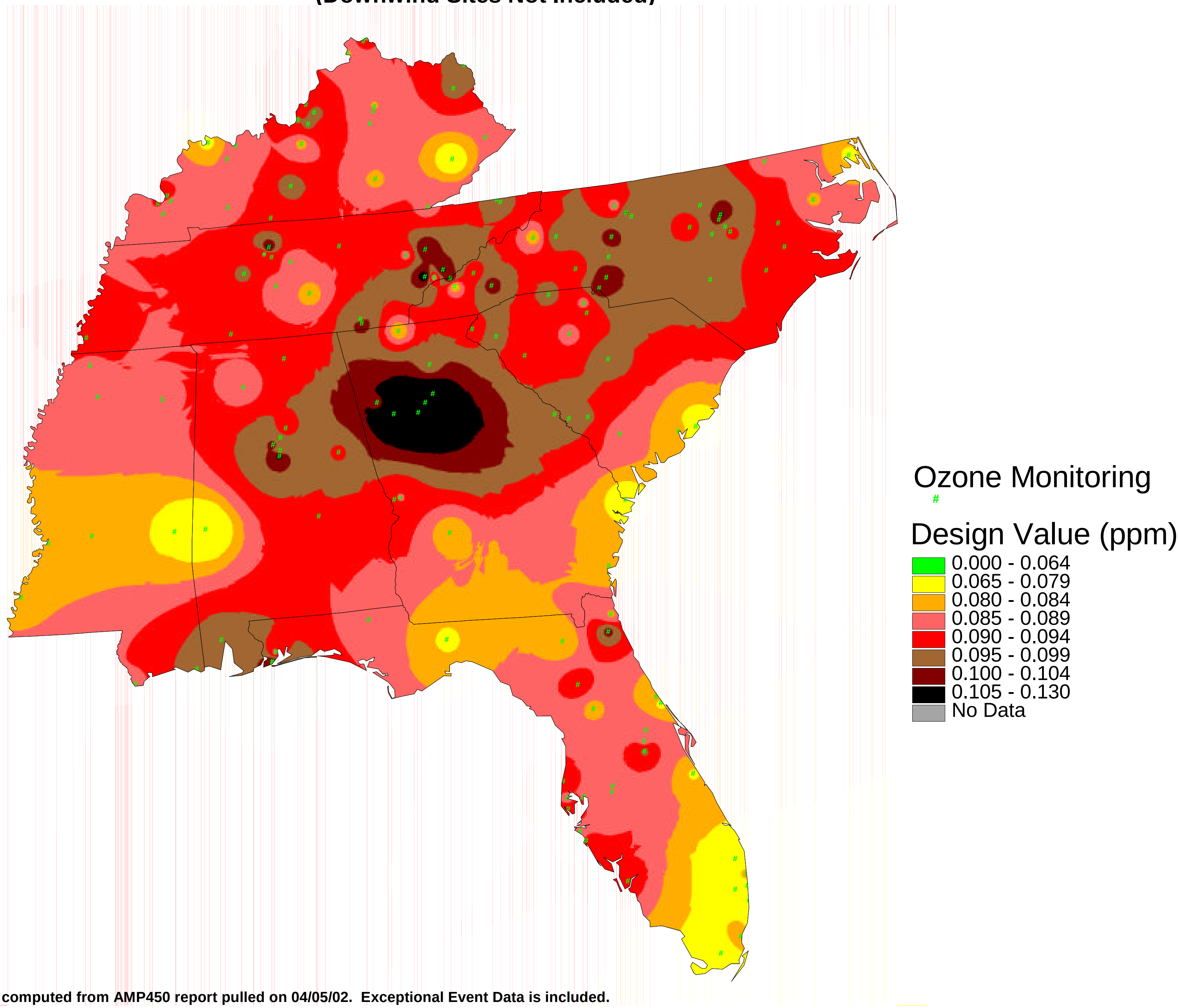
(when Upwind Sites are Not Included)



8-Hr Ozone Design Values computed from AMP450 report pulled on 04/05/02. Exceptional Event Data is included.

8-Hr Ozone 4th Max for 1998

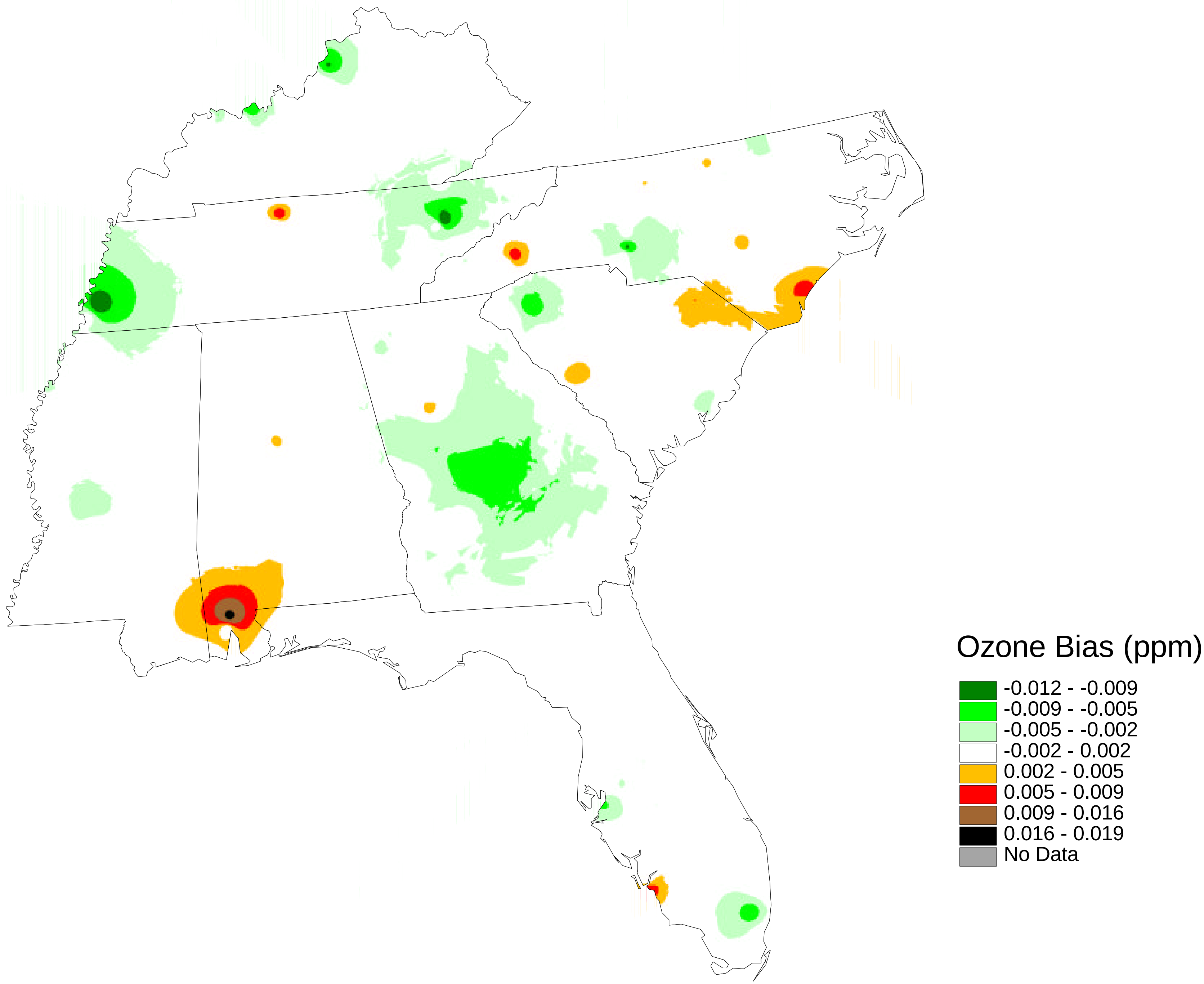
(Downwind Sites Not Included)



8-Hr Ozone Design Values computed from AMP450 report pulled on 04/05/02. Exceptional Event Data is included.

Bias in 8-Hr Ozone 4th Max for 1998

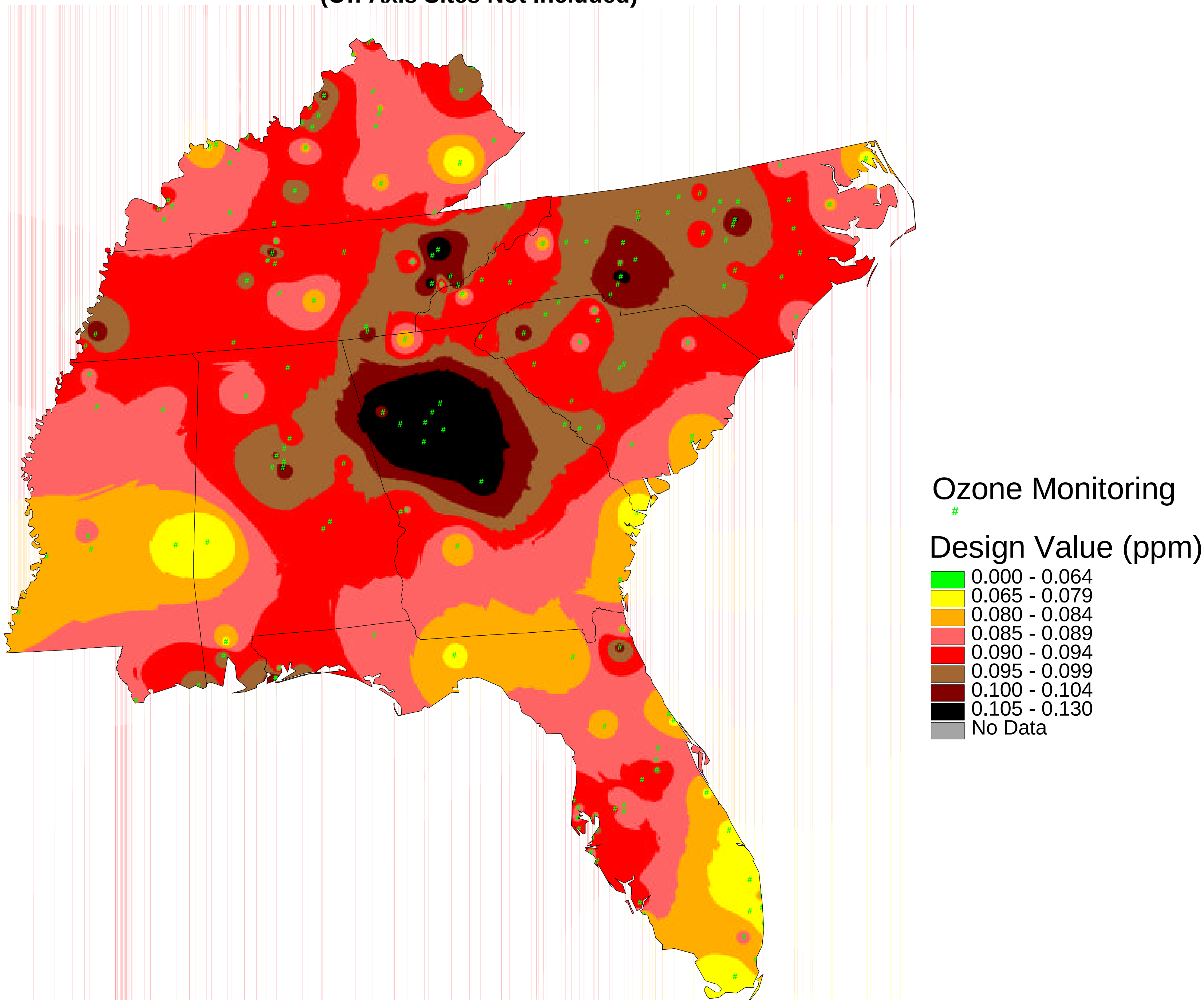
(when Downwind Sites are Not Included)



8-Hr Ozone Design Values computed from AMP450 report pulled on 04/05/02. Exceptional Event Data is included.

8-Hr Ozone 4th Max for 1998

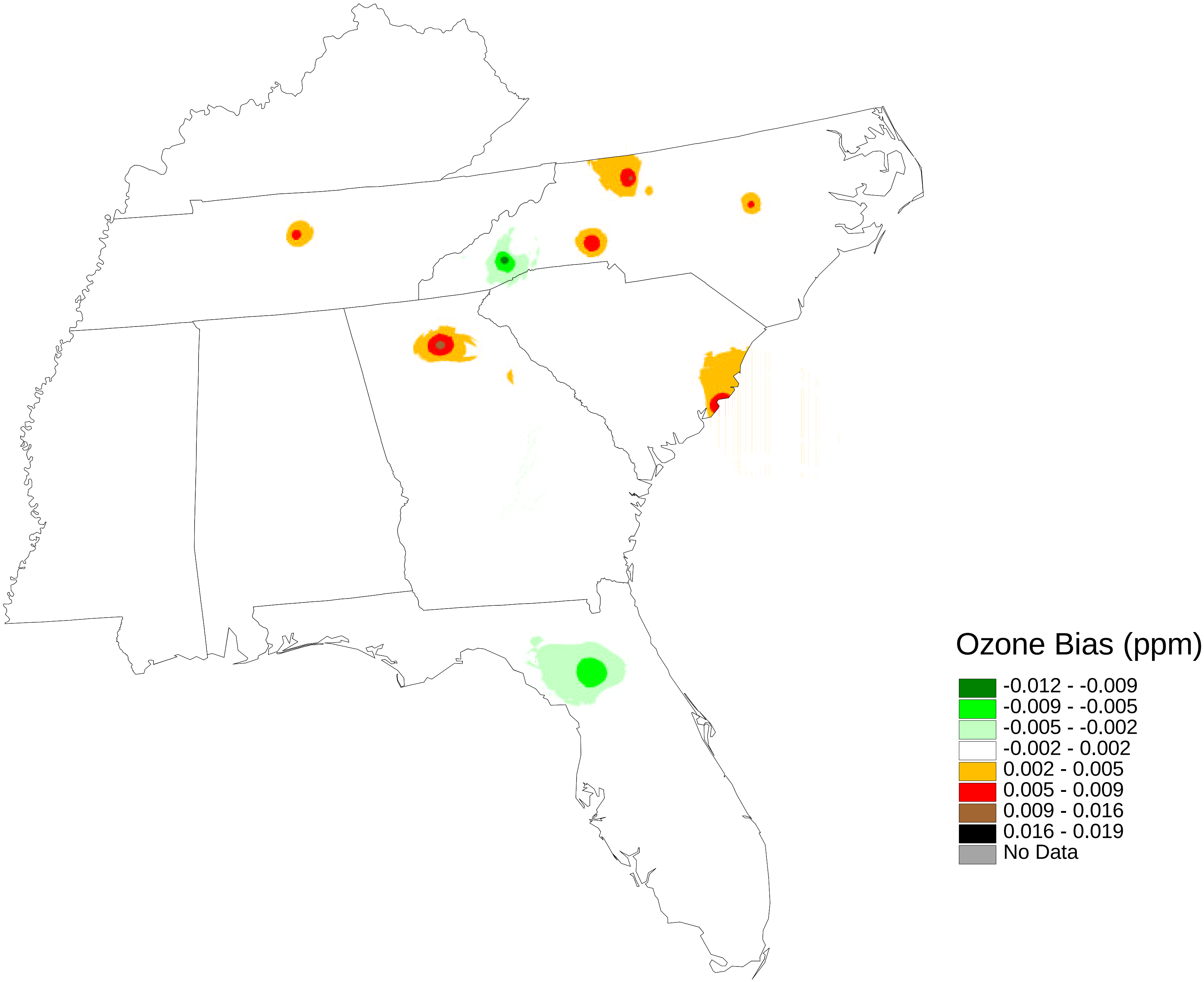
(Off Axis Sites Not Included)



8-Hr Ozone Design Values computed from AMP450 report pulled on 04/05/02. Exceptional Event Data is included.

Bias in 8-Hr Ozone 4th Max for 1998

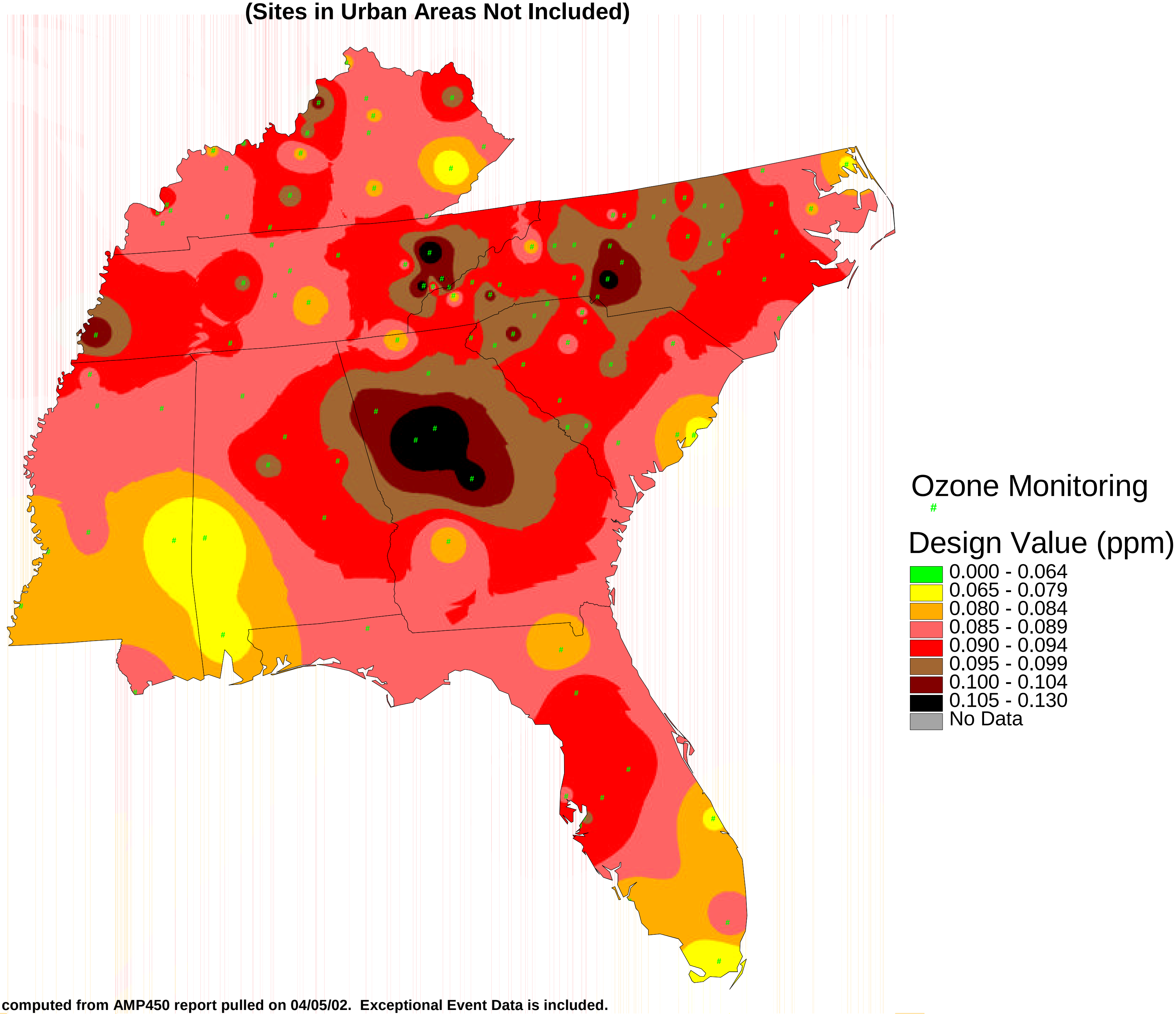
(when Off Axis Sites are Not Included)



8-Hr Ozone Design Values computed from AMP450 report pulled on 04/05/02. Exceptional Event Data is included.

8-Hr Ozone 4th Max for 1998

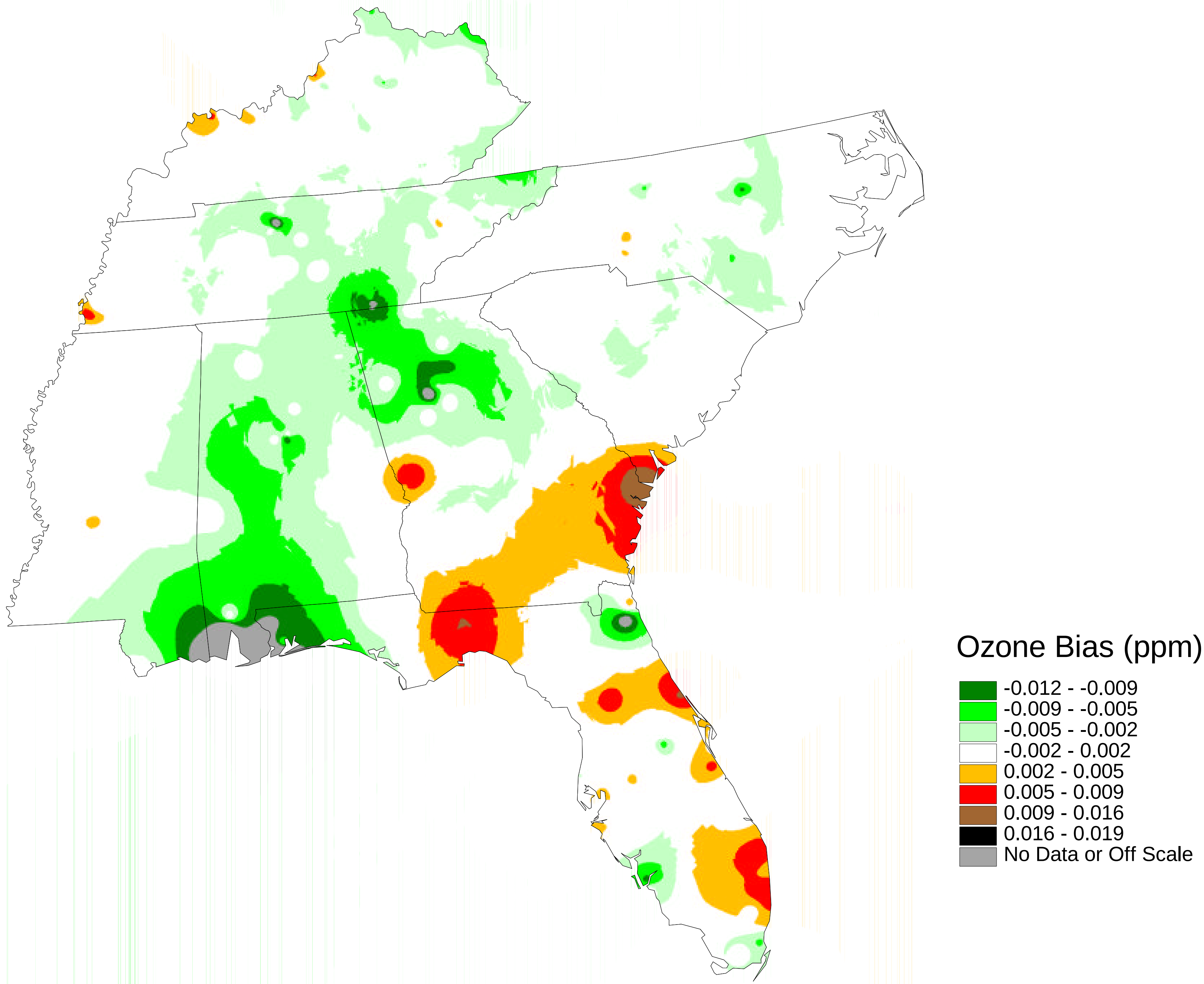
(Sites in Urban Areas Not Included)



8-Hr Ozone Design Values computed from AMP450 report pulled on 04/05/02. Exceptional Event Data is included.

Bias in 8-Hr Ozone 4th Max for 1998

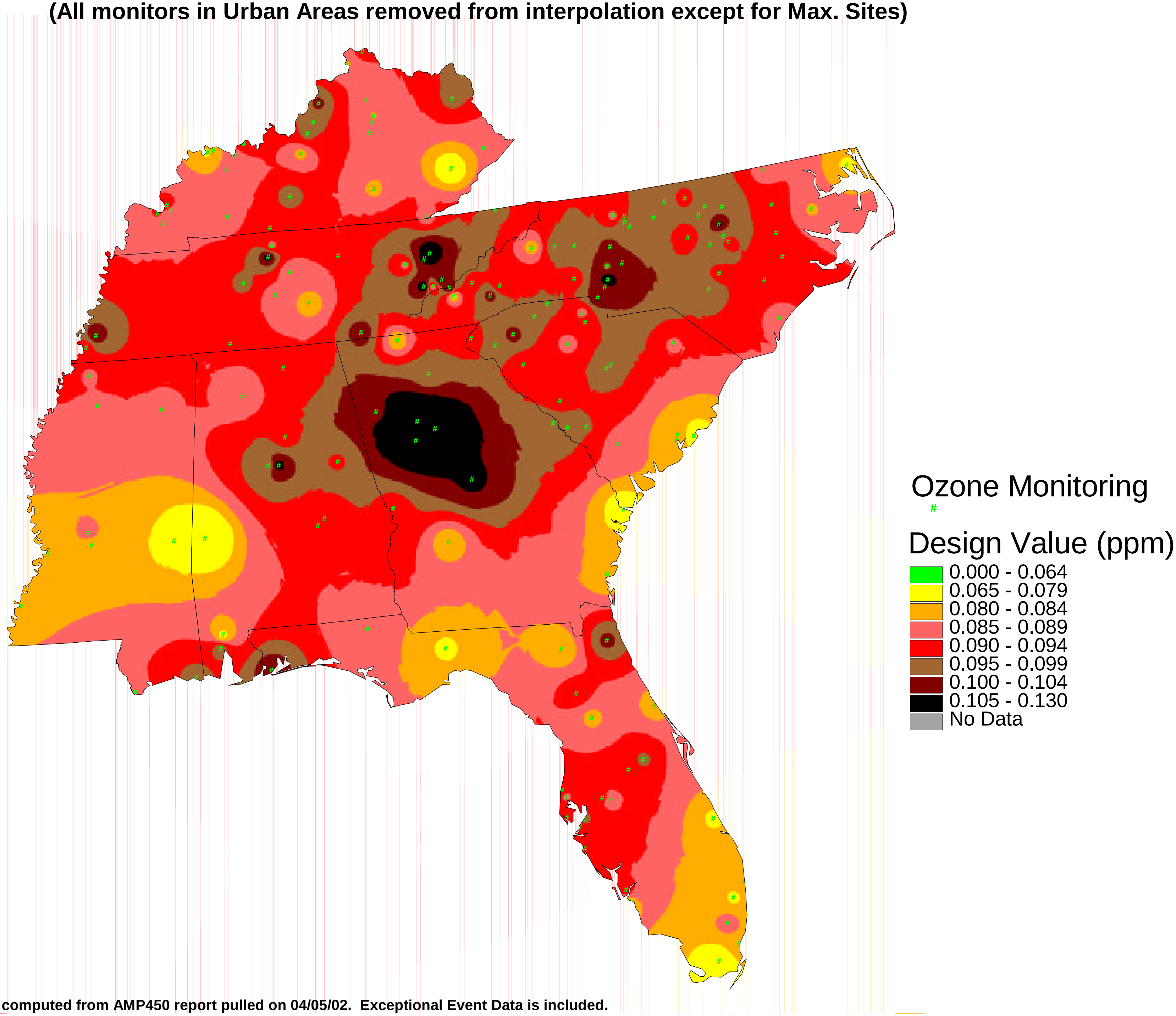
(when Urban Area Sites are Not Included)



8-Hr Ozone Design Values computed from AMP450 report pulled on 04/05/02. Exceptional Event Data is included.

8-Hr Ozone 4th Max for 1998

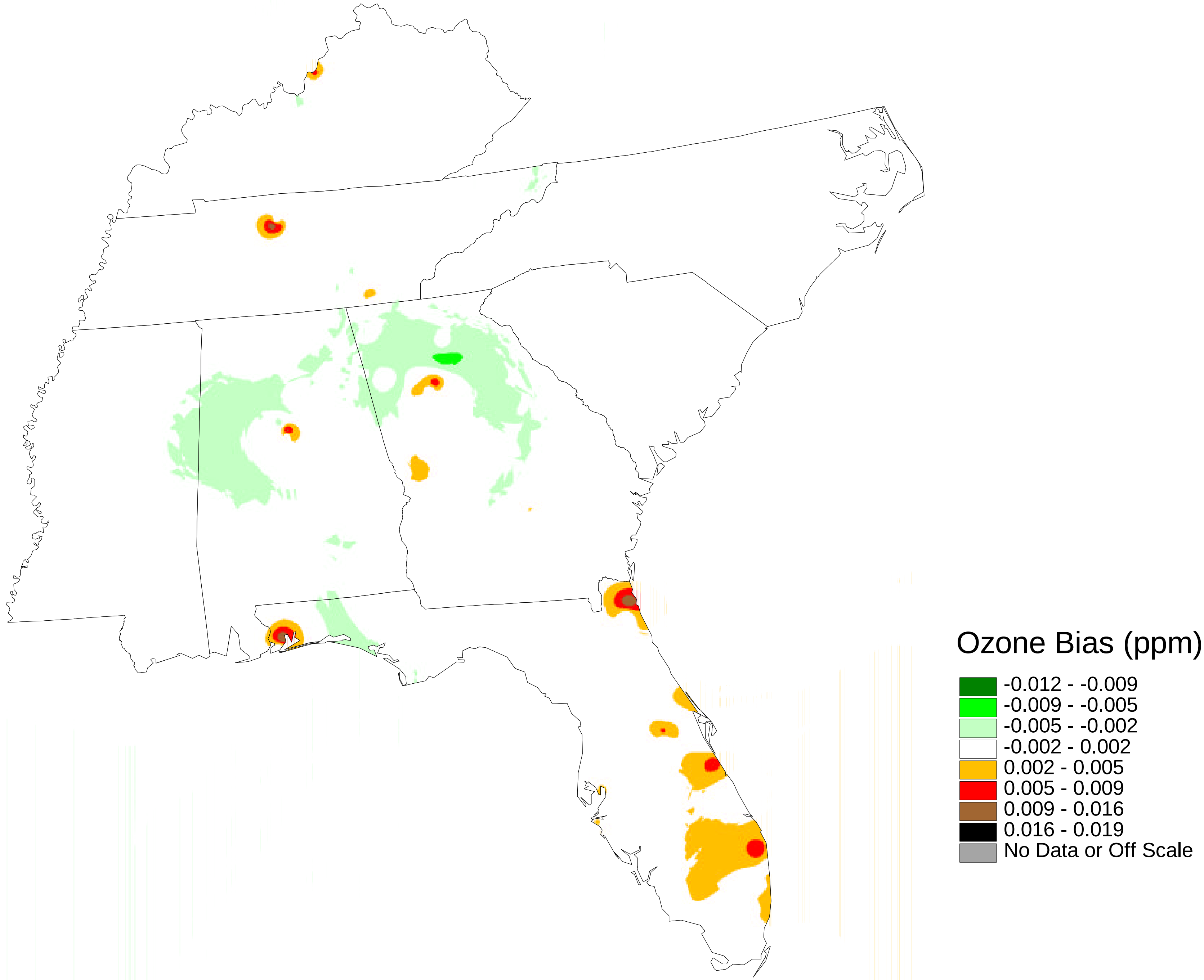
(All monitors in Urban Areas removed from interpolation except for Max. Sites)



8-Hr Ozone Design Values computed from AMP450 report pulled on 04/05/02. Exceptional Event Data is included.

Bias in 8-Hr Ozone 4th Max for 1998

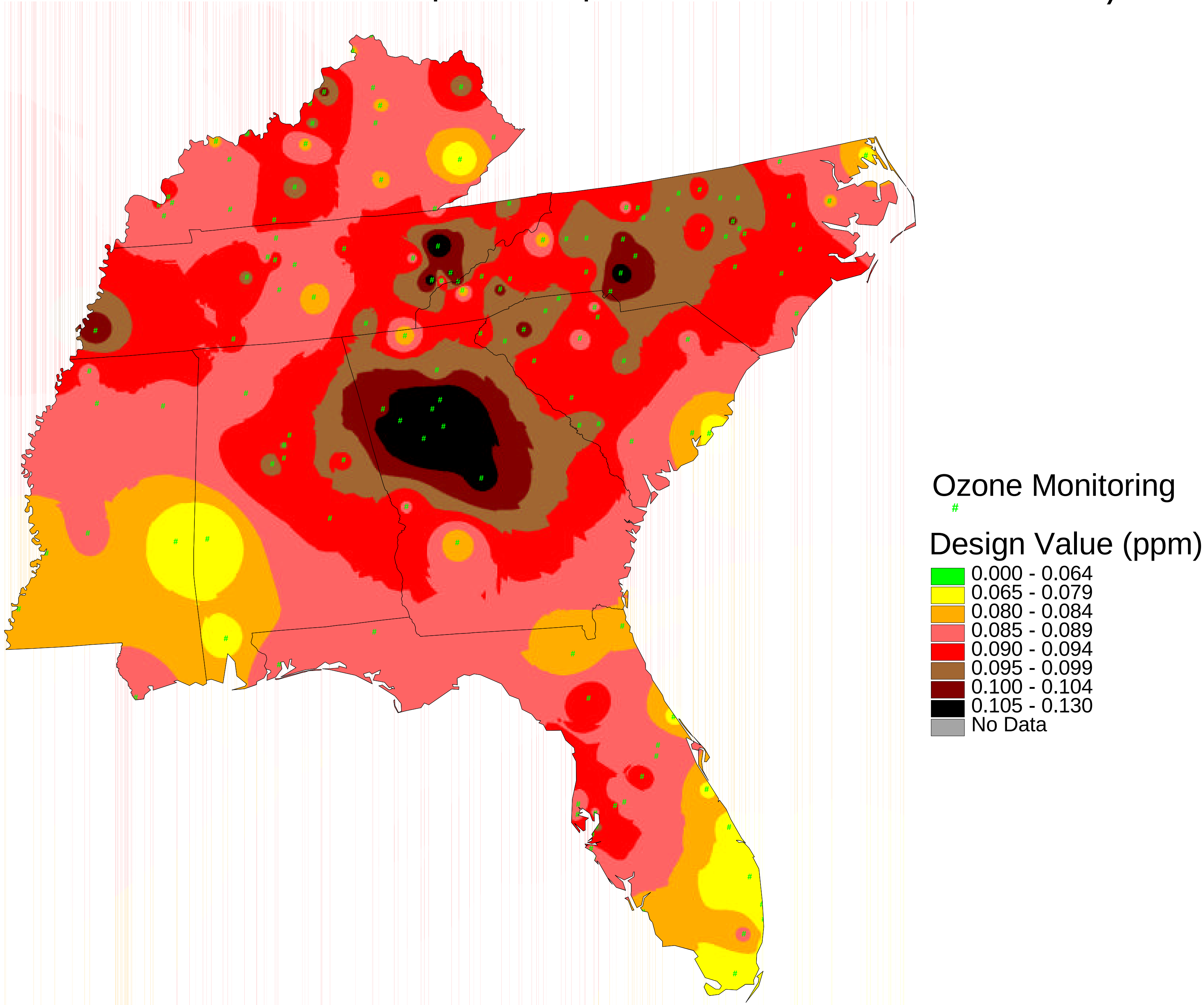
(when Only the Max Urban Area Site is retained in the Urban Area Network)



8-Hr Ozone Design Values computed from AMP450 report pulled on 04/05/02. Exceptional Event Data is included.

8-Hr Ozone 4th Max for 1998

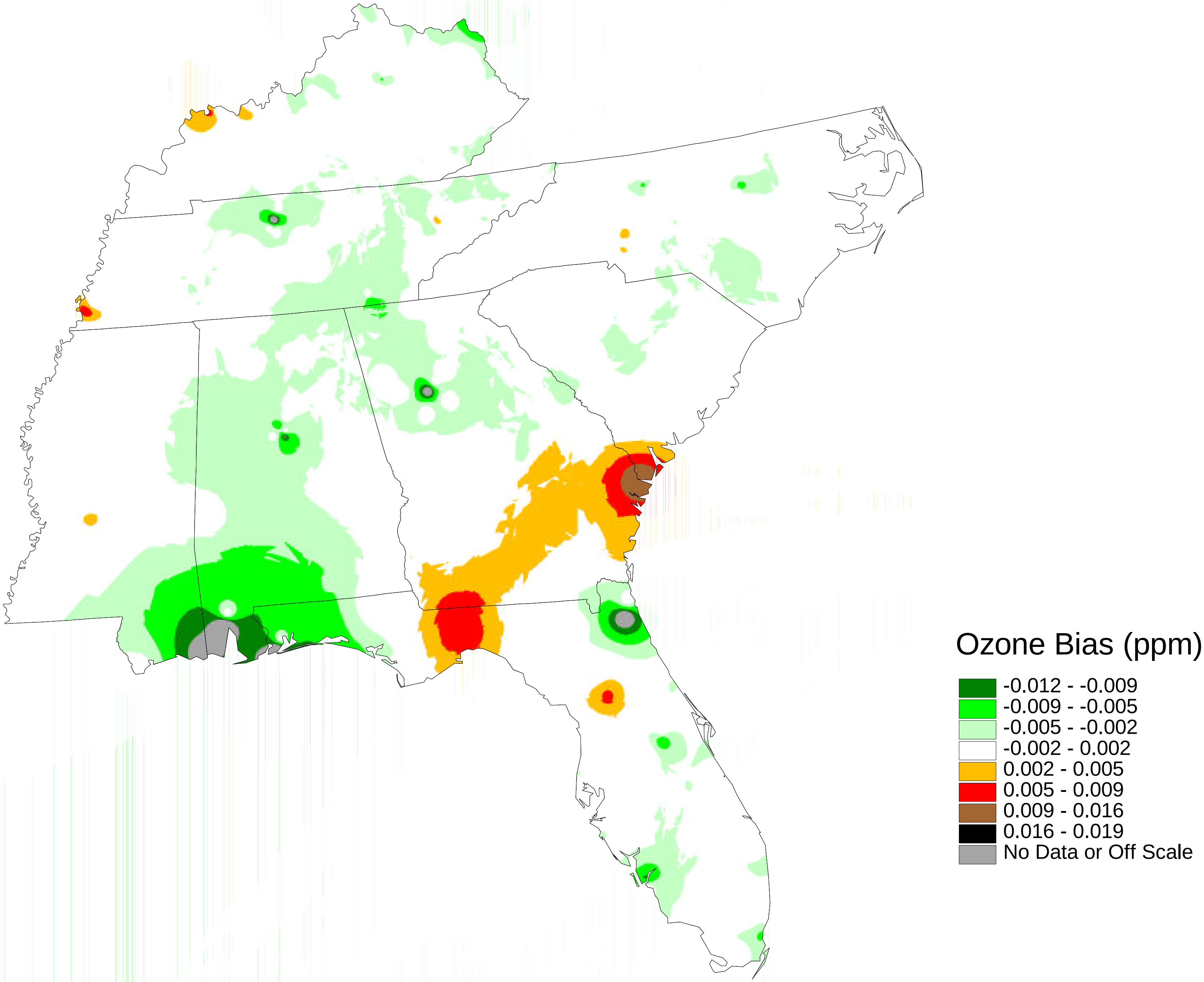
(All monitors in Urban Areas removed from interpolation except for monitors below mean for the Urban Area)



8-Hr Ozone Design Values computed from AMP450 report pulled on 04/05/02. Exceptional Event Data is included.

Bias in 8-Hr Ozone 4th Max for 1998

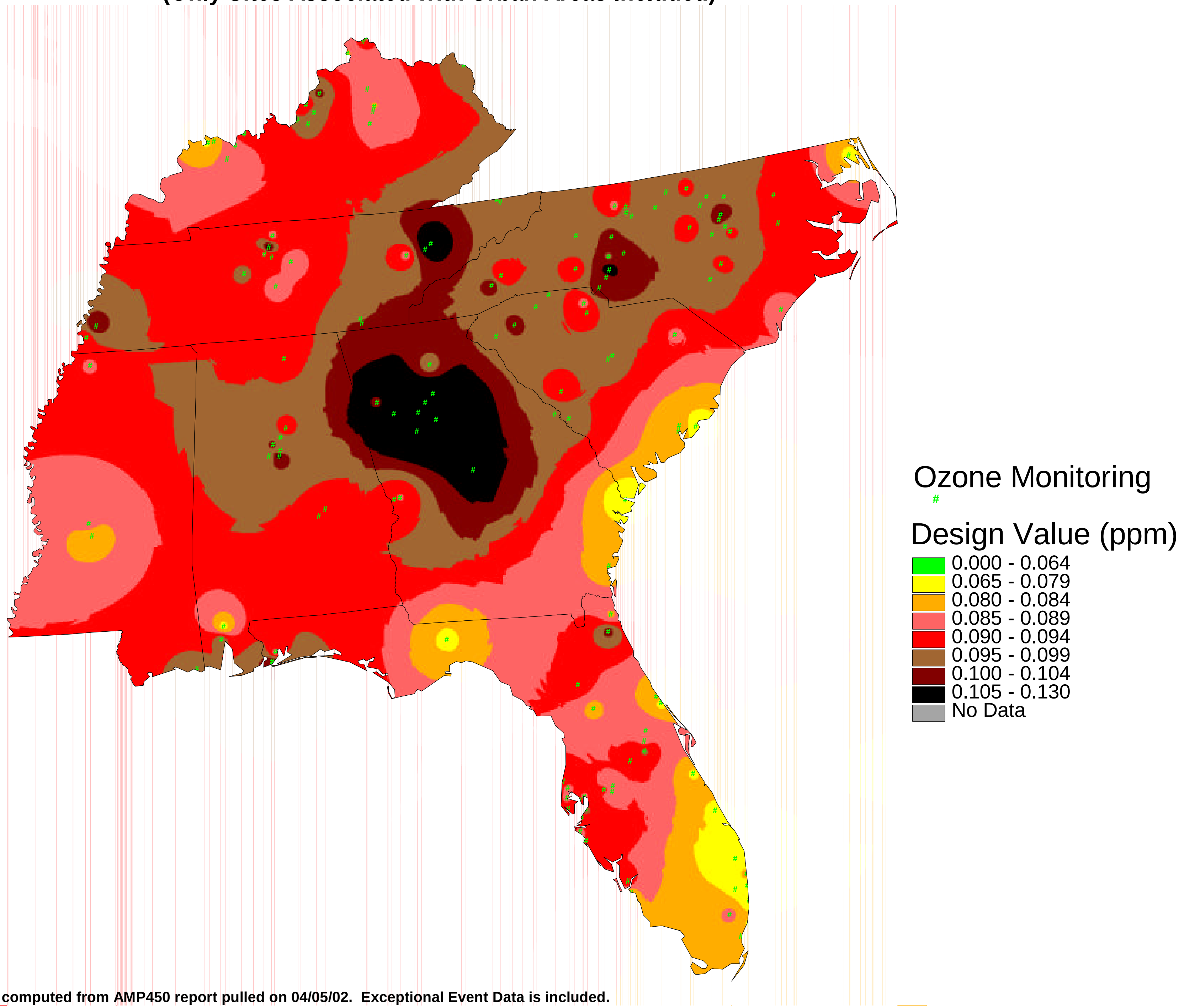
(when Only the Urban Area Sites Below the Mean in the Urban Area Network are retained)



8-Hr Ozone Design Values computed from AMP450 report pulled on 04/05/02. Exceptional Event Data is included.

8-Hr Ozone 4th Max for 1998

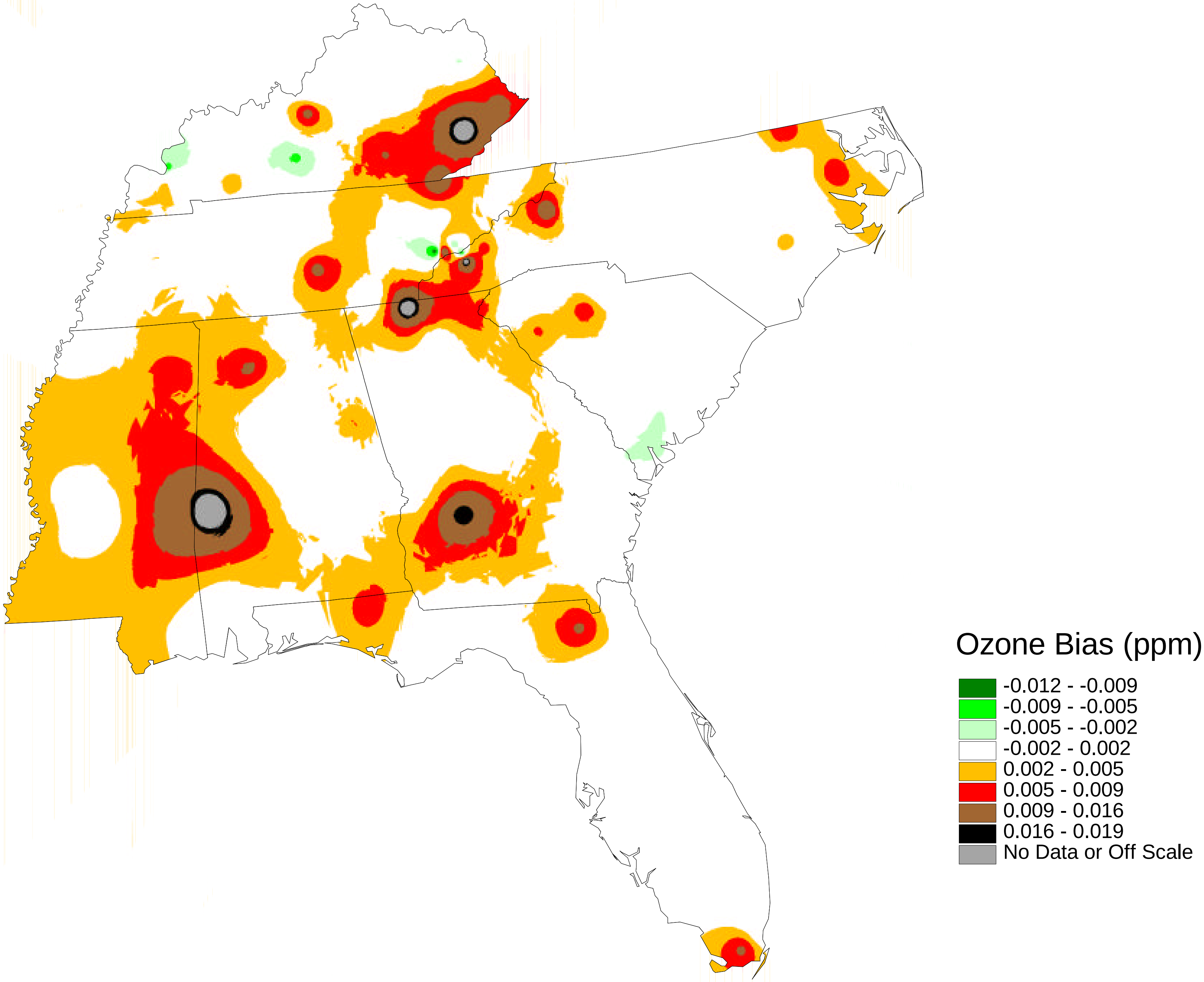
(Only Sites Associated with Urban Areas Included)



8-Hr Ozone Design Values computed from AMP450 report pulled on 04/05/02. Exceptional Event Data is included.

Bias in 8-Hr Ozone 4th Max for 1998

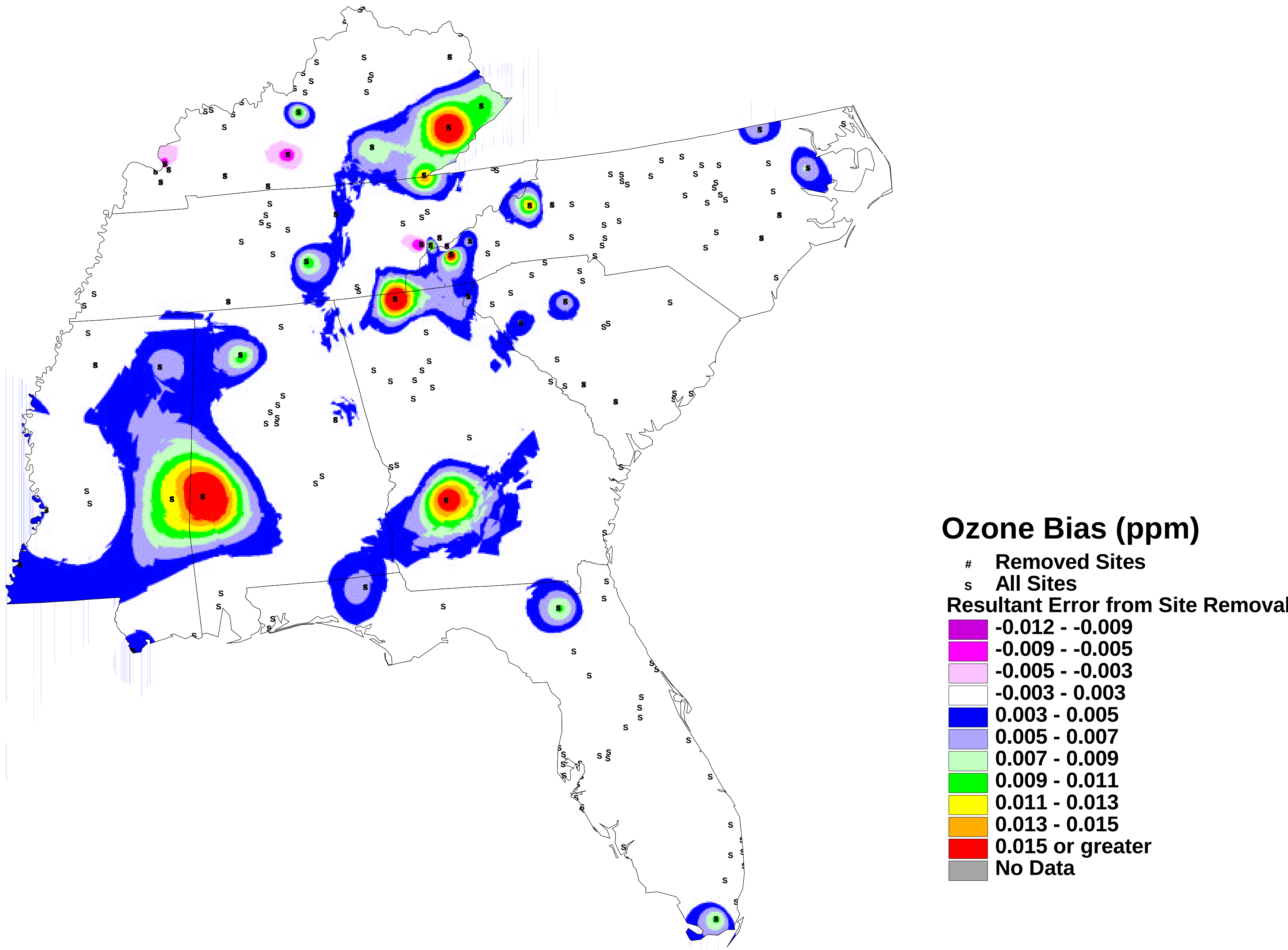
(when Only Sites Assoc. /w Urban Areas are Included)



8-Hr Ozone Design Values computed from AMP450 report pulled on 04/05/02. Exceptional Event Data is included.

Bias in 8-Hr Ozone 4th Max for 1998

(when Only Sites Assoc. /w Urban Areas are Included)



8-Hr Ozone Design Values computed from AMP450 report pulled on 04/05/02. Exceptional Event Data is included.

Georgia Department of Natural Resources

Environmental Protection Division, Air Protection Branch
4244 International Parkway, Suite 120, Atlanta, Georgia 30354
404/363-7000
Lonice C. Barrett, Commissioner
Harold F. Reheis, Director

August 1, 2002

MEMORANDUM

TO: Doug Jager
EPA Region 4

FROM: Susan Zimmer-Dauphinee
Program Manager
Ambient Monitoring Program

SUBJECT: Ozone Monitoring Network Development

The Atlanta metropolitan area core ozone monitoring network for a number of years consisted of 5 sites. These sites were located at Dallas/Yorkville (upwind site), Sweetwater Creek/Douglasville site (established under the direction of EPA Region 4), Confederate Ave (urban core), South Dekalb (urban core/index), and Conyers (downwind). Originally, the Tucker site was established as one of the Atlanta 1992 intensive SOS study sites. Georgia Tech indicated that the continuation of measurements at Tucker would be a valuable dataset for both the researchers and the regulatory agencies and so in 1996 the Tucker site was established as a type 2 PAMS site, urban core secondary downwind direction. . The Gwinette Tech site was also established as part of the 1992 SOS study, operations continued at the Gwinette Tech site due to modeling results which indicted that Gwinette ozone concentrations may be higher than those found at Conyers.

In 1996 the EPD began an ozone forecasting program in conjunction with Georgia Tech. It was soon discovered that the network was not complete enough to provide both regional data for the forecasters as well as verification of the accuracy of the forecast. Georgia Tech representatives were also indicating a more extensive ozone network should be developed. The Newnan, Waleska, and Kennesaw sites were established that the data needs might be met. These three sites are in downwind directions not normally experienced in Atlanta and are located in high population growth counties. The Fayetteville site was established when the Fayette County political authorities did not believe that there was an ozone problem in their county. They were indicating that they would protest inclusion in the non-attainment area, so the site was established to provide information on ozone concentrations in the county.

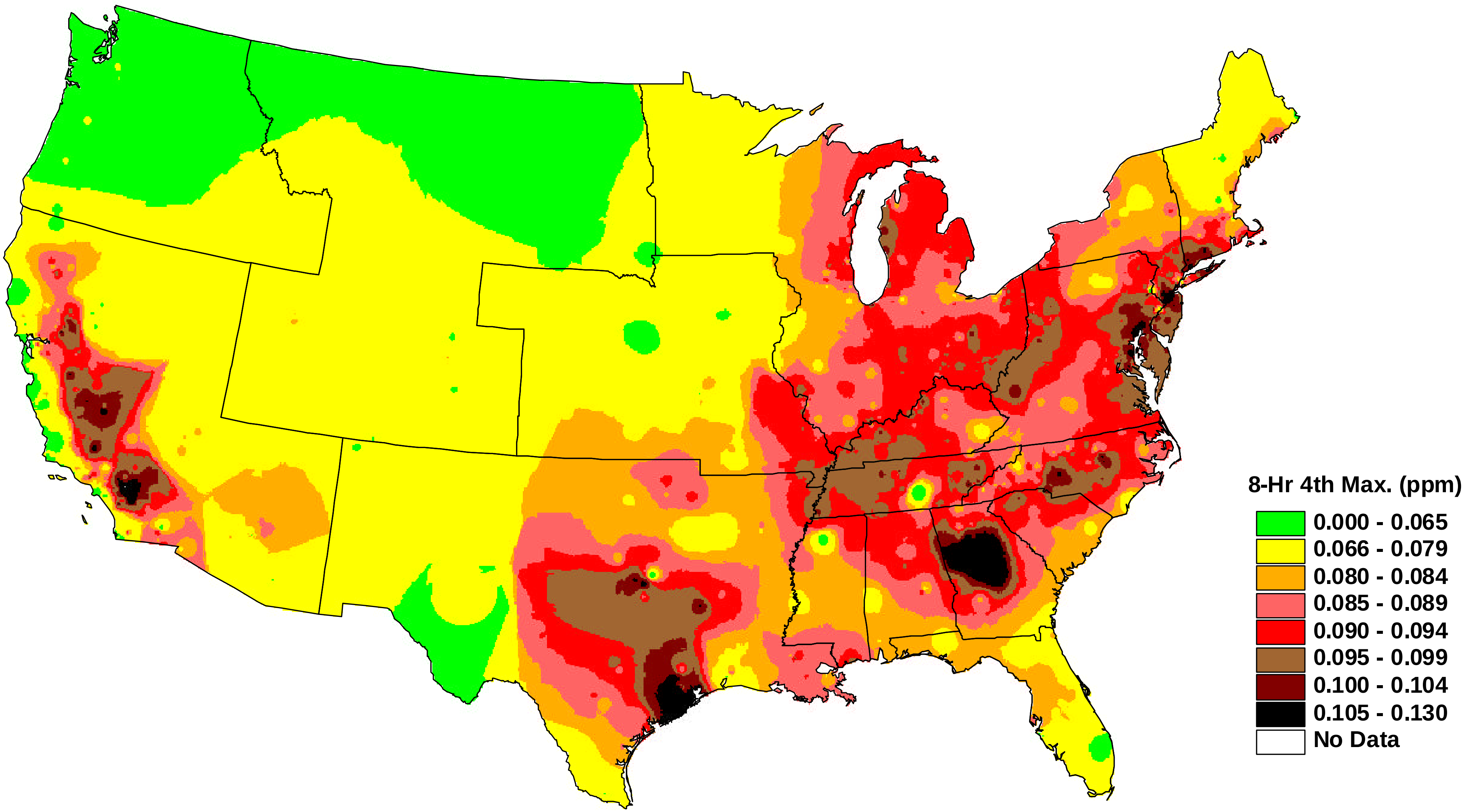
Appendix B-4

Assessment of Current Region 4 Network

Supporting documentation for Section IV. (D)

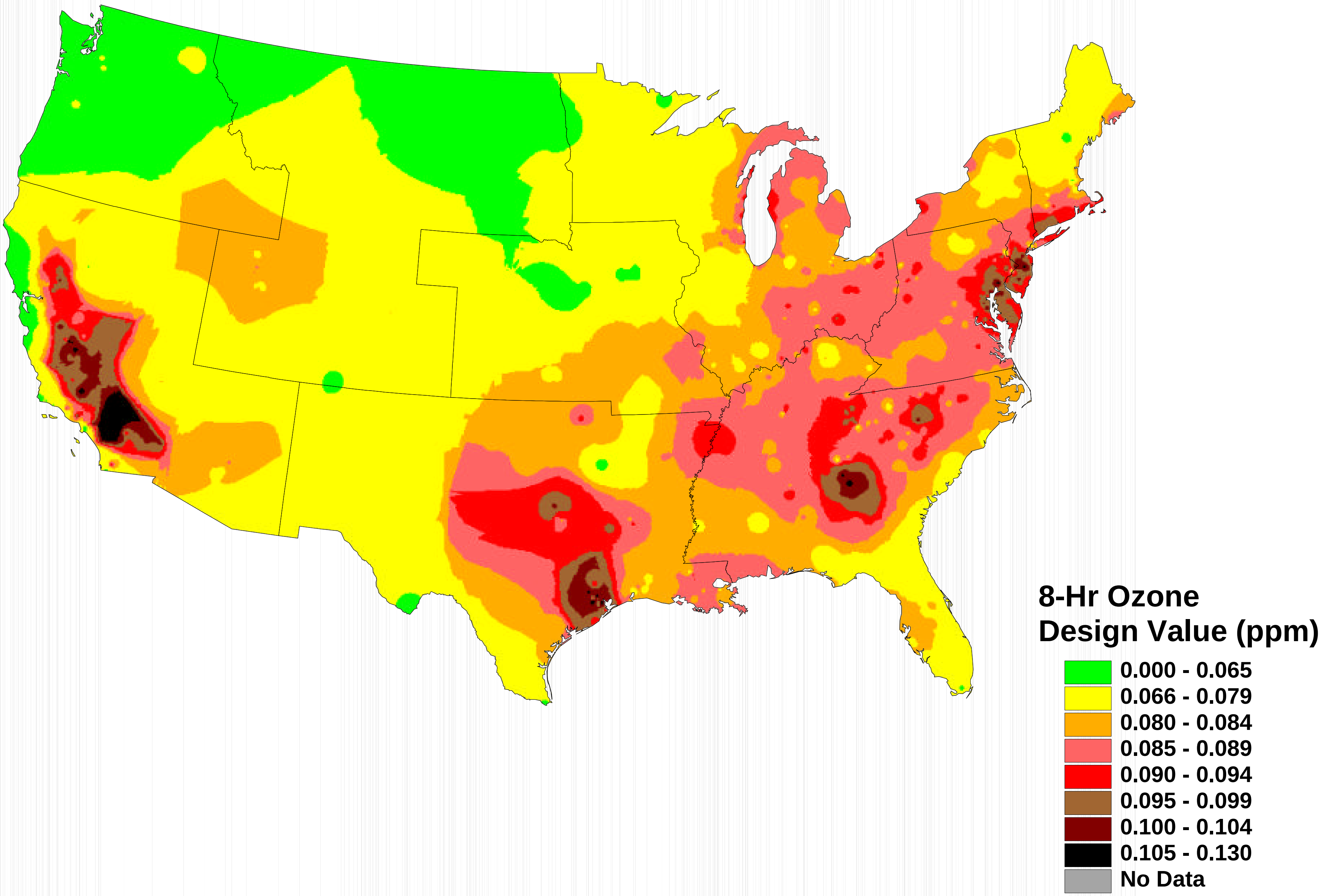
Other Findings (O_3 and $PM_{2.5}$)

1999 8-Hr Ozone 4th Max



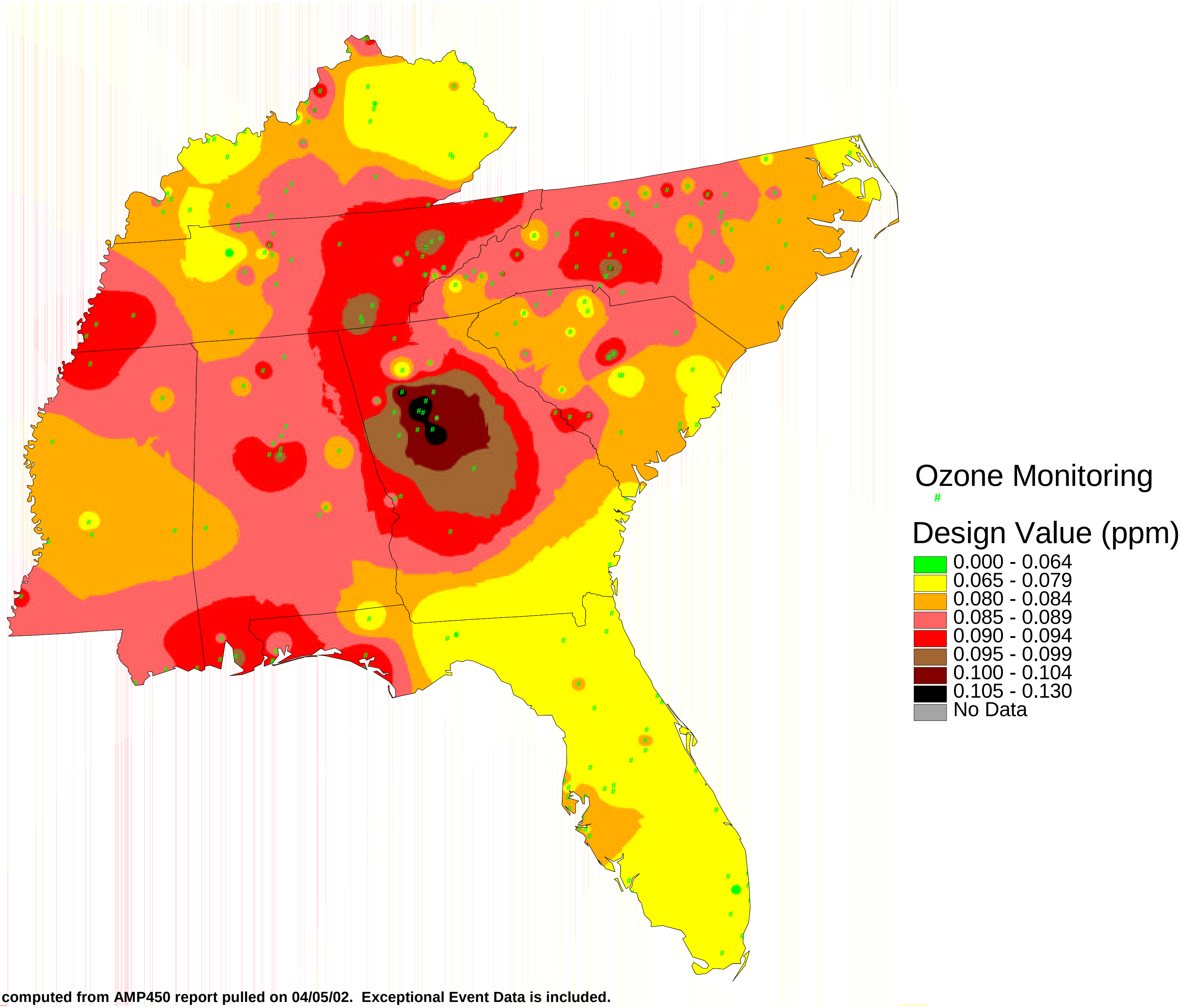
Exceptional Events are included. 5 sqkm grid cell used.

Interpolated 8-Hr Ozone Design Values (99-01)



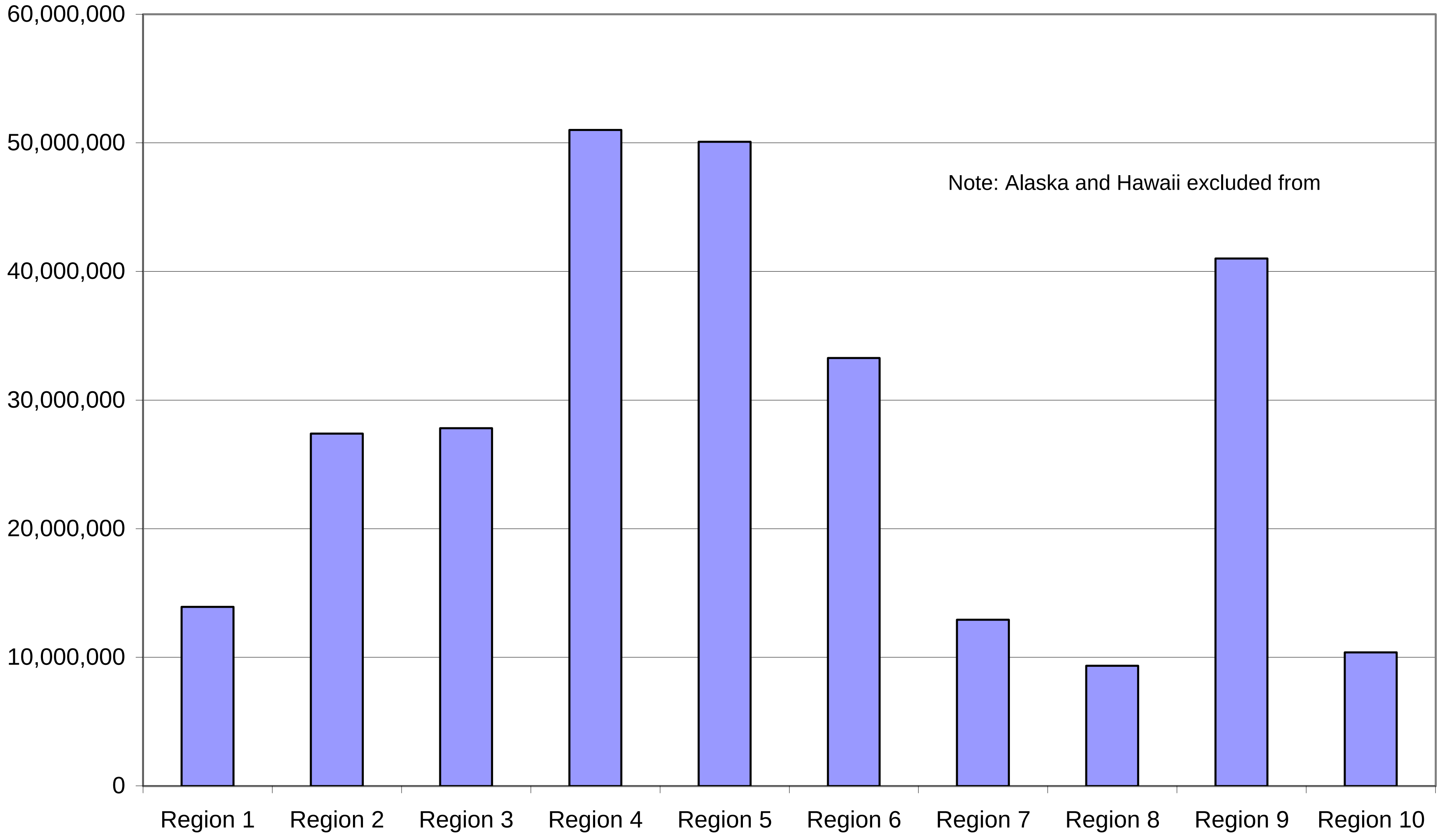
Data was pulled from AIRS-AQS on 04/18/02 using an AMP450 report. Exceptional Event Data is included.
Data is interpolated to a 5km grid.

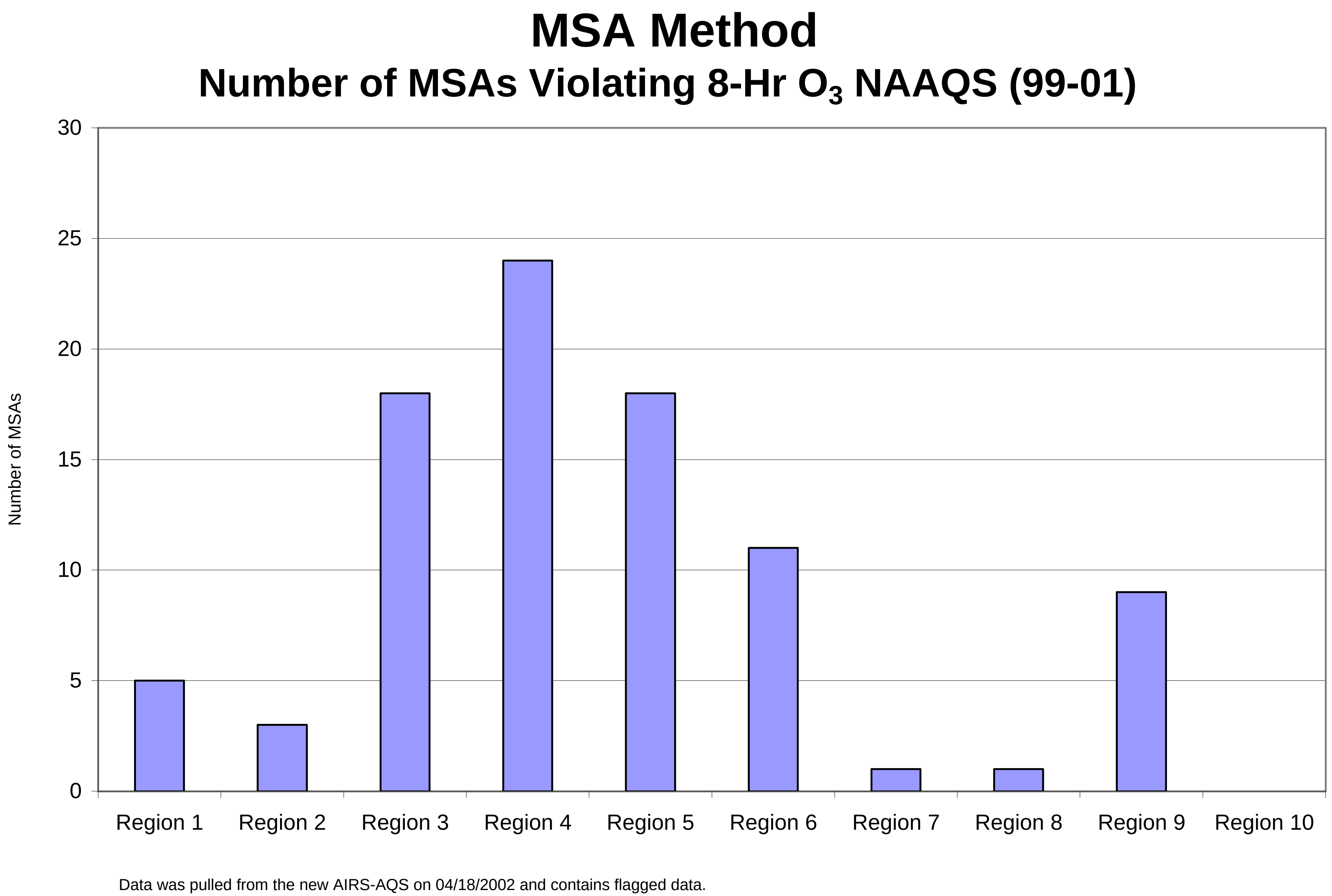
8-Hr Ozone 4th Max for 2000

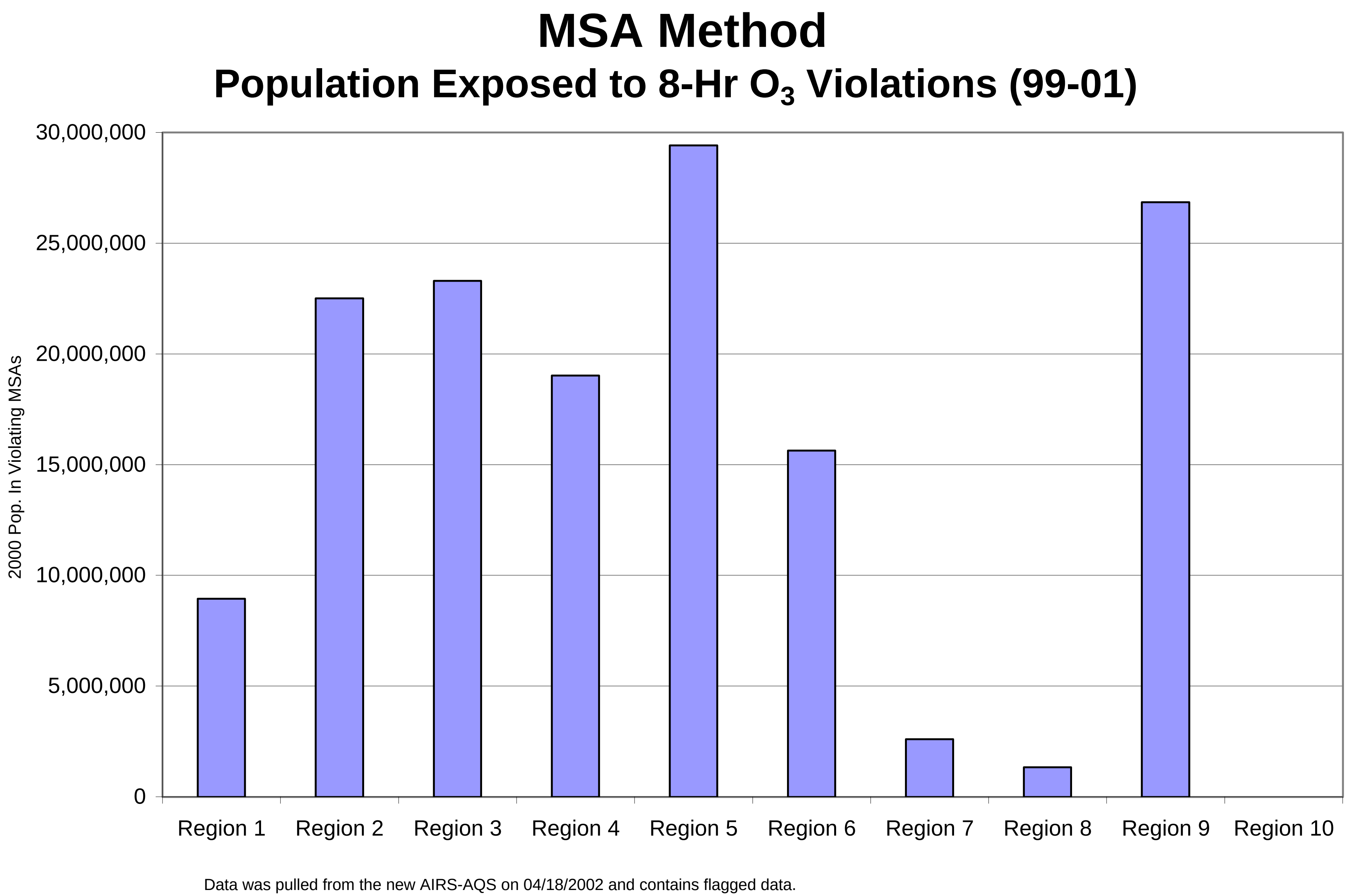


8-Hr Ozone Design Values computed from AMP450 report pulled on 04/05/02. Exceptional Event Data is included.

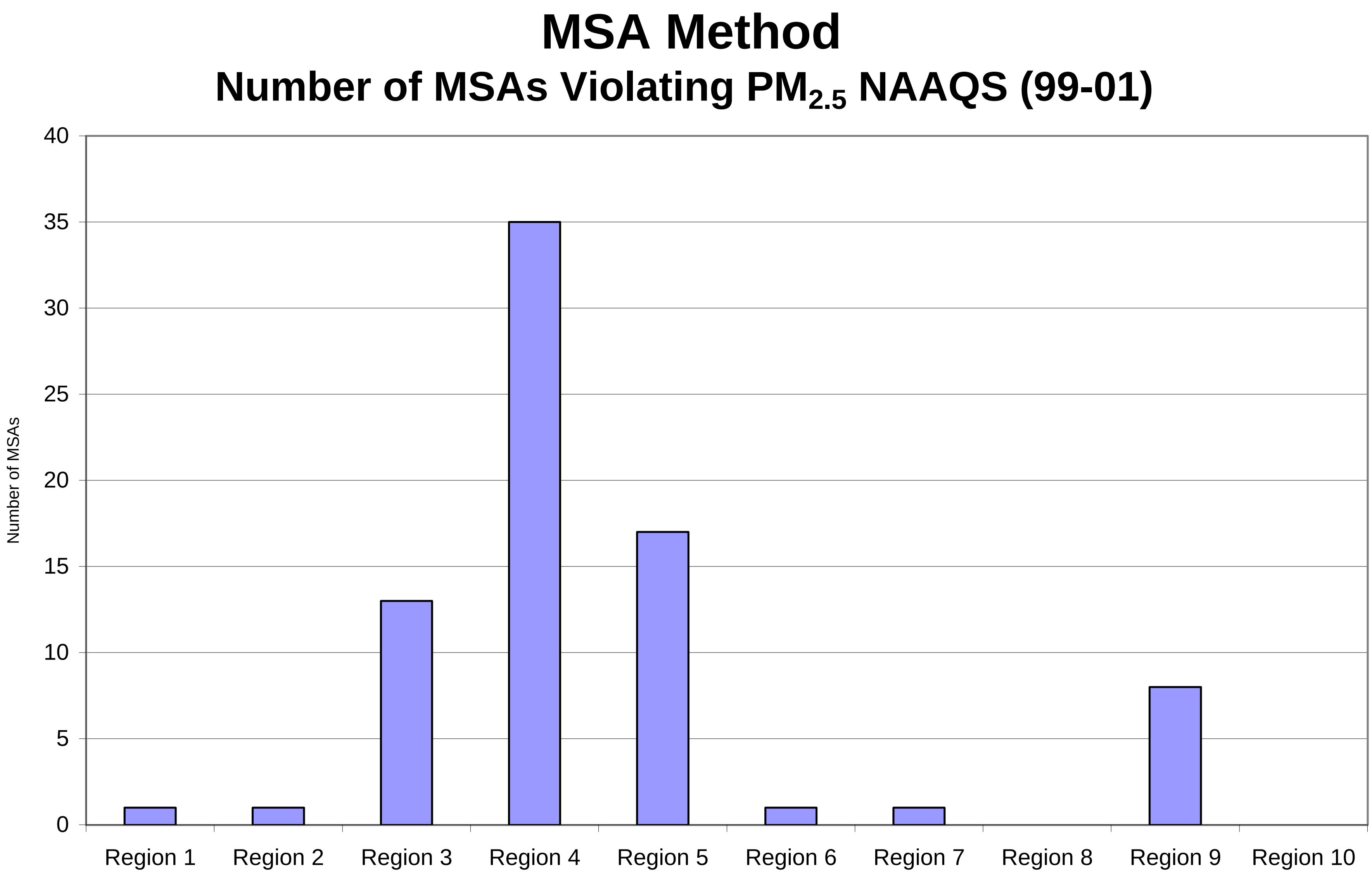
2000 Census Populations by Region



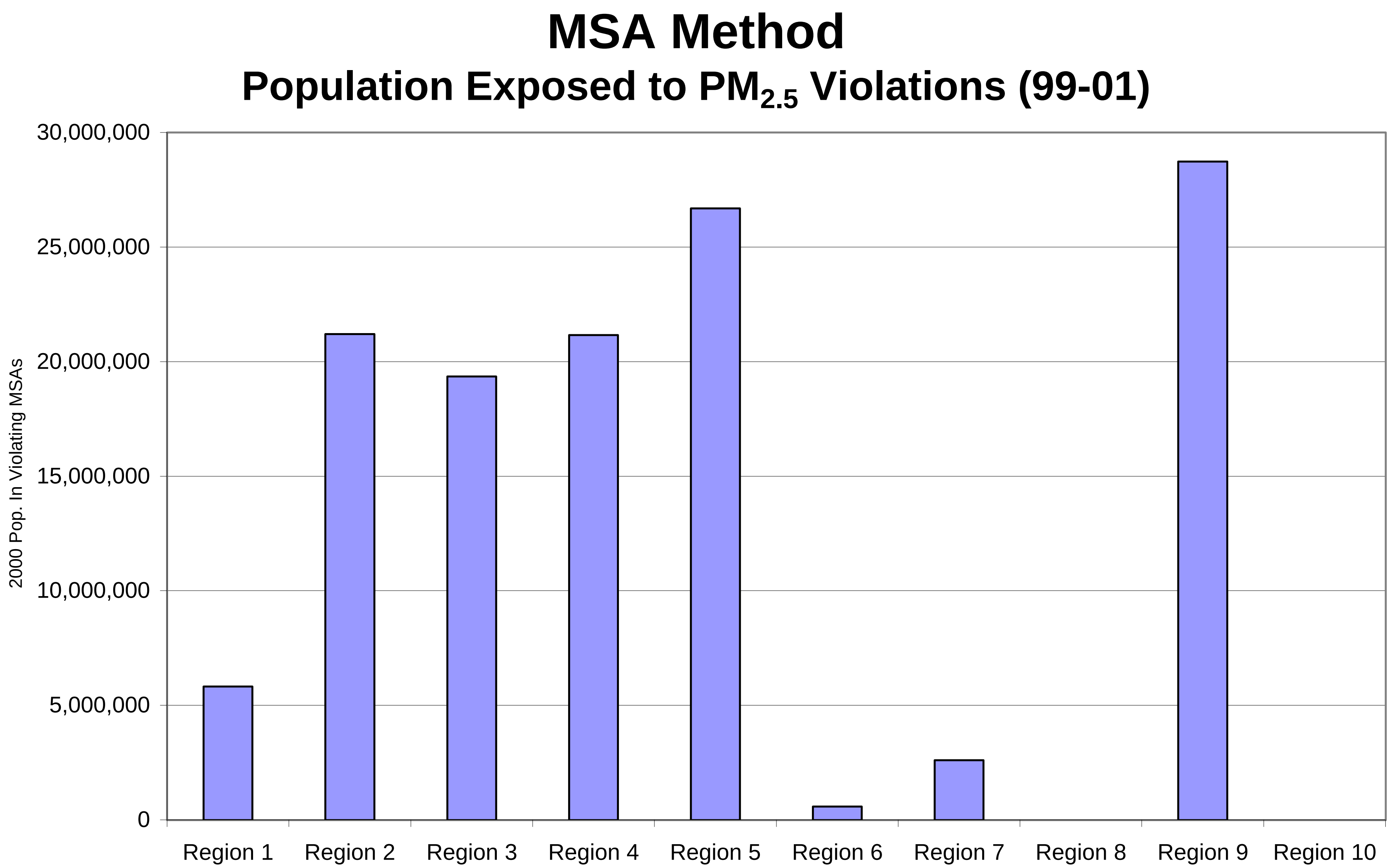

MSA Method
Number of MSAs Violating 8-Hr O3 NAAQS (99-01)
Number of MSAs
30
25
20
15
10
5
0
Region 1
Region 2
Region 3
Region 4
Region 5
Region 6
Region 7
Region 8
Region 9
Region 10
Data was pulled from the new AIRS-AQS on 04/18/2002 and contains flagged data.



MSA Method
Population Exposed to 8-Hr O3 Violations (99-01)
30,000,000
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
2000 Pop. In Violating MSAs
Region 1
Region 2
Region 3
Region 4
Region 5
Region 6
Region 7
Region 8
Region 9
Region 10
Data was pulled from the new AIRS-AQS on 04/18/2002 and contains flagged data.



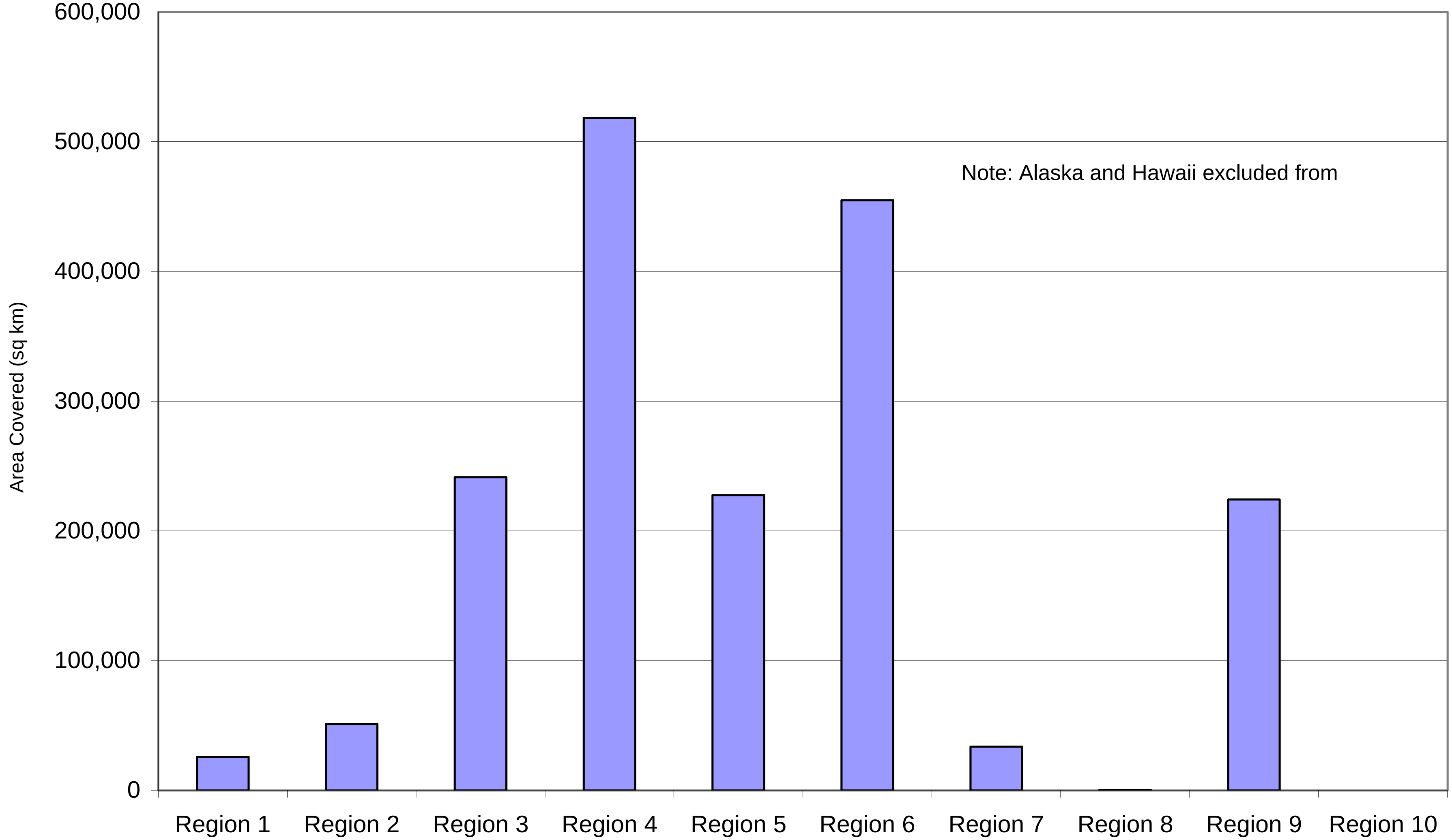
Data was pulled from the new AIRS-AQS on 04/18/2002 and contains flagged data.

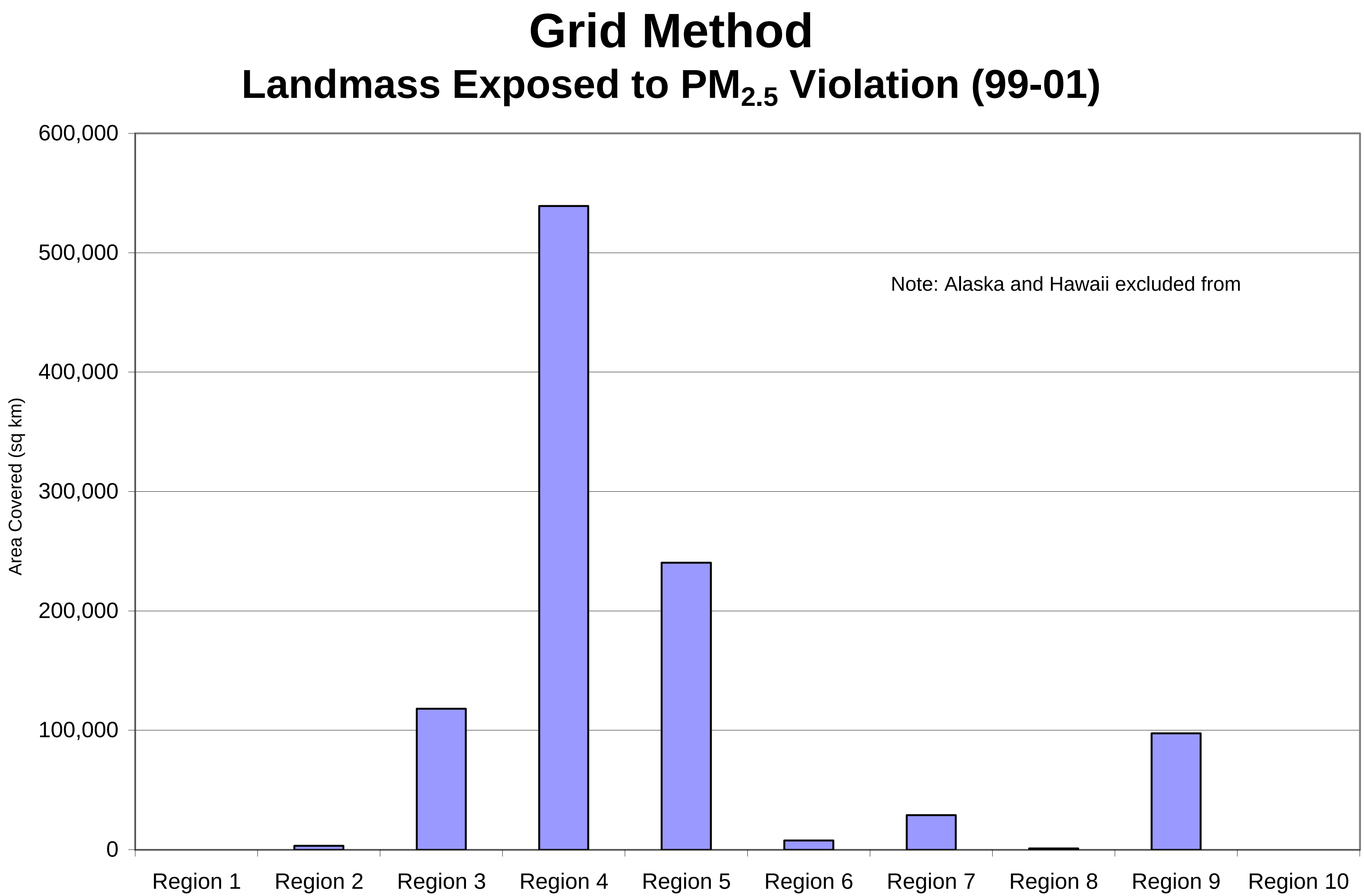


Data was pulled from the new AIRS-AQS on 04/18/2002 and contains flagged data.

Grid Method

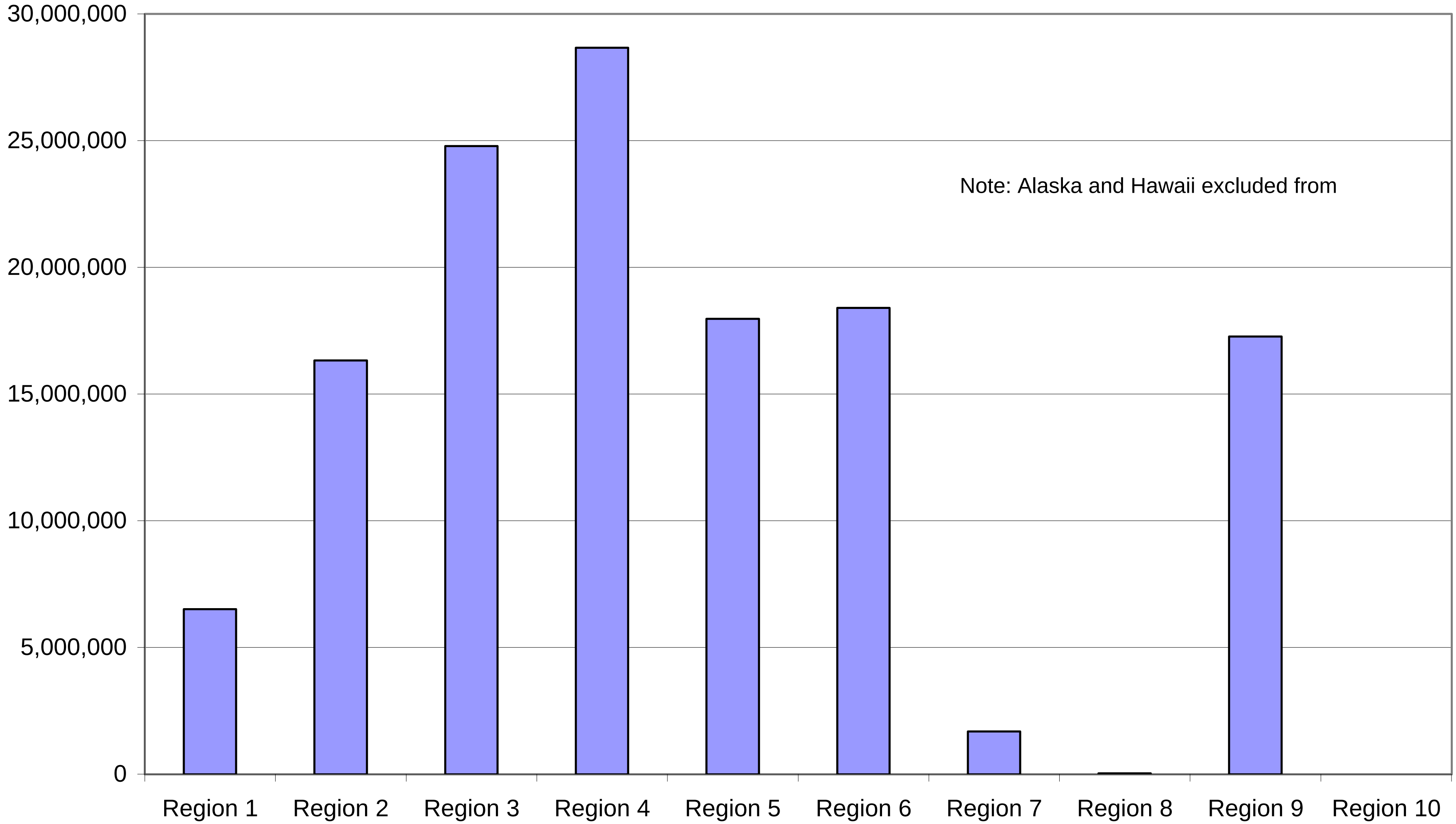
Landmass Exposed to 8-Hr O_3 Violation (99-01)




Grid Method
Landmass Exposed to PM2.5 Violation (99-01)
Area Covered (sq km)
600,000
500,000
400,000
300,000
200,000
100,000
0
Note: Alaska and Hawaii excluded from
Region 1
Region 2
Region 3
Region 4
Region 5
Region 6
Region 7
Region 8
Region 9
Region 10

Grid Method

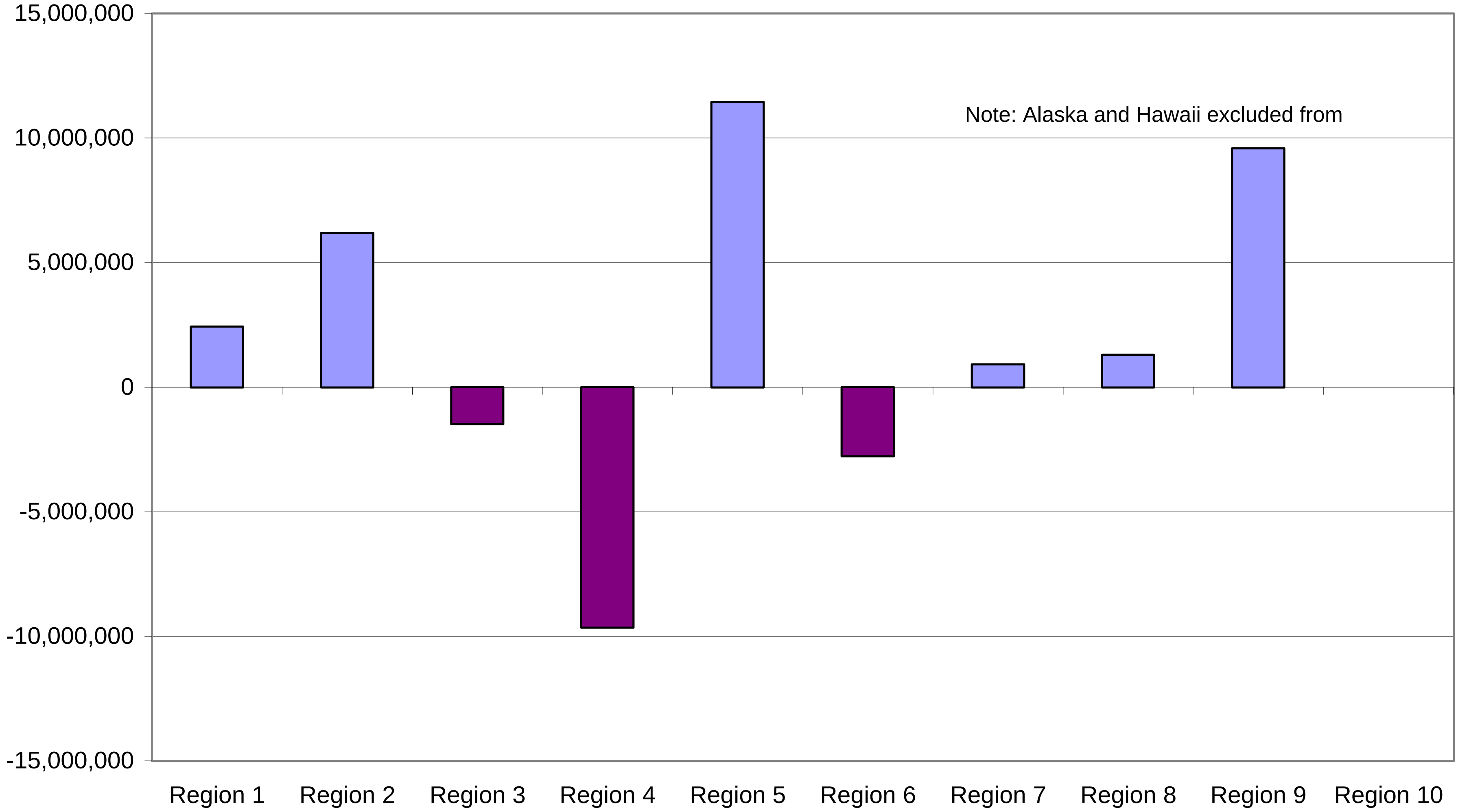
Population Exposed to 8-Hr O_3 Violations (99-01)



5km^2 Population Grids produced from 2000 Census County Level Data

MSAs vs Grid Method

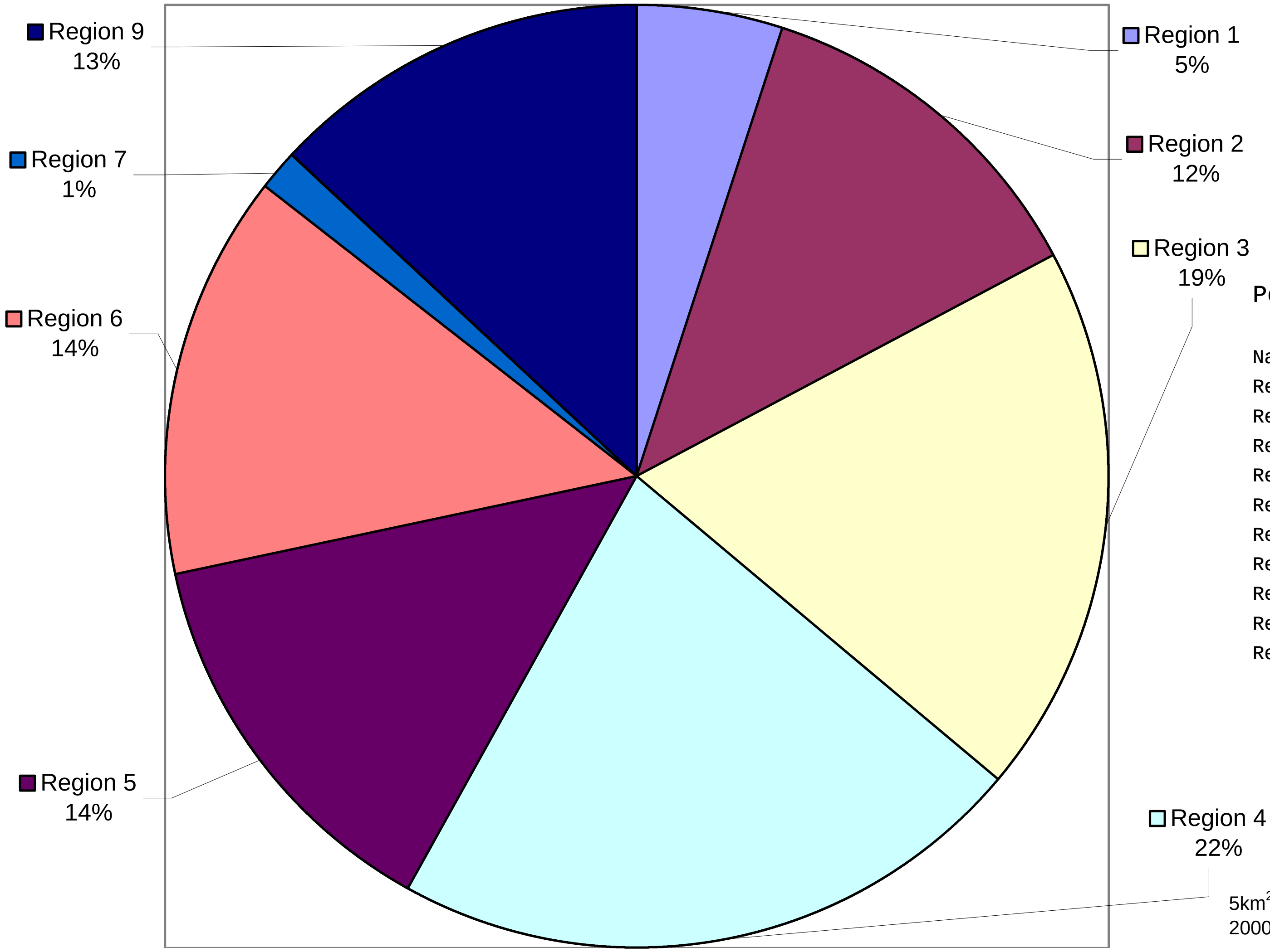
Bias in Pop. Exposed to 8-Hr O_3 Violations (99-01)



5km^2 Population Grids produced from 2000 Census County Level Data

Grid Method

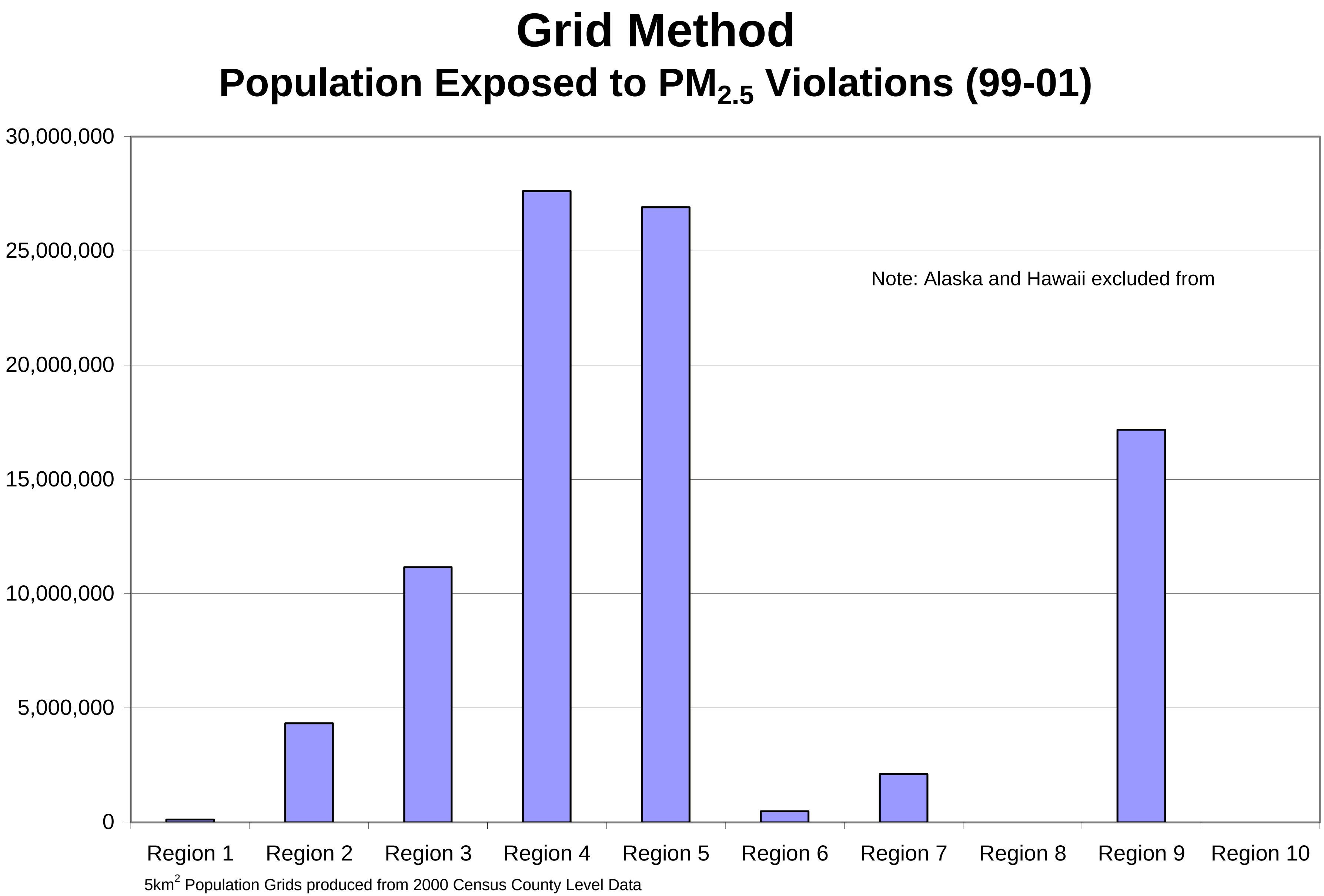
Population Exposed to 8-Hr O_3 Violations (99-01)



Population Exposed

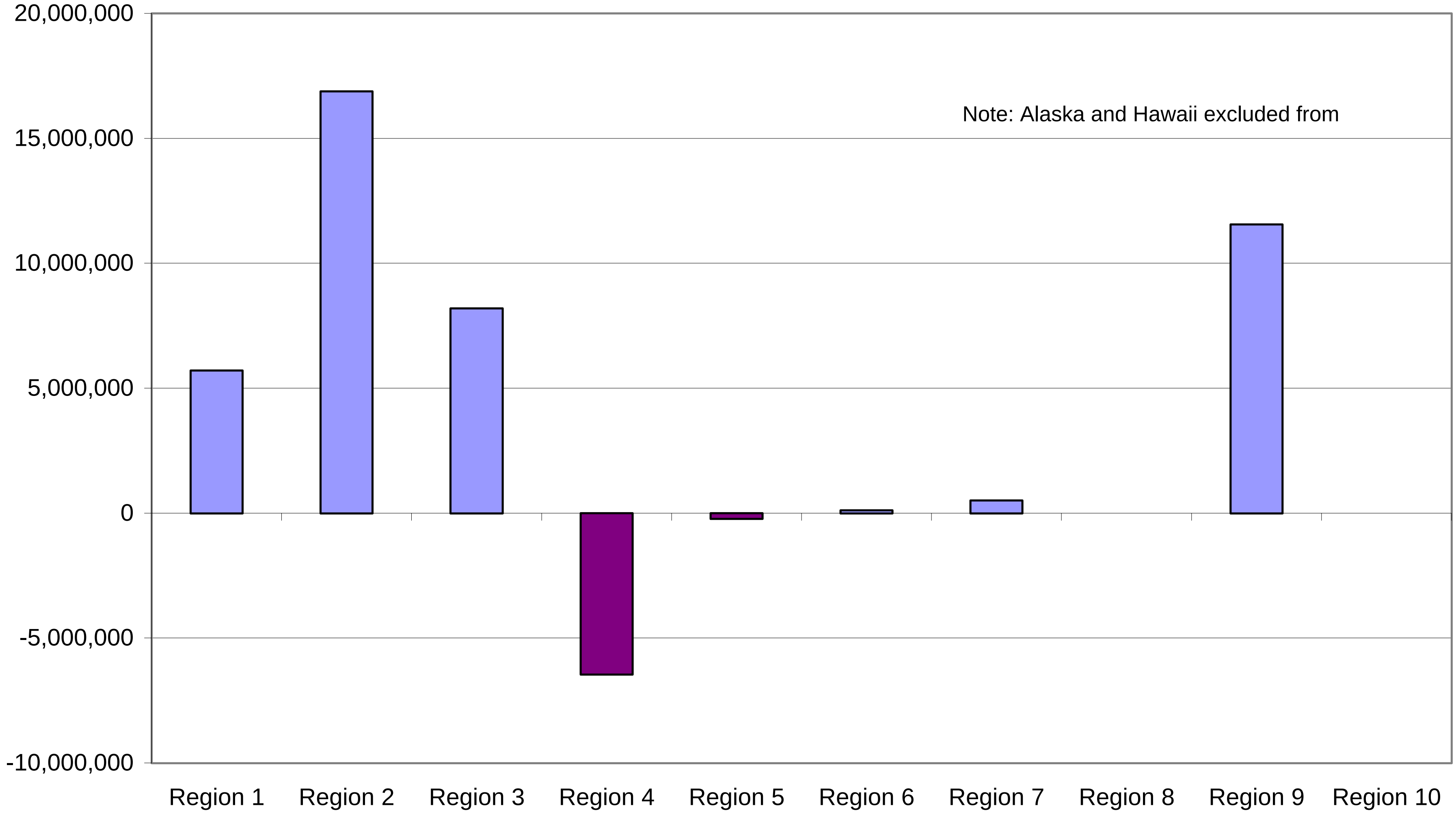
National	131,649,296
Region 1	6,509,370
Region 2	16,324,712
Region 3	24,785,238
Region 4	28,663,280
Region 5	17,969,696
Region 6	18,400,906
Region 7	1,687,786
Region 8	29,037
Region 9	17,266,512
Region 10	0

5km^2 Population Grids produced from 2000 Census County Level Data


Grid Method
Population Exposed to PM2.5 Violations (99-01)
30,000,000
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
Note: Alaska and Hawaii excluded from
Region 1
Region 2
Region 3
Region 4
Region 5
Region 6
Region 7
Region 8
Region 9
Region 10
5km2 Population Grids produced from 2000 Census County Level Data

MSAs vs Grid Method

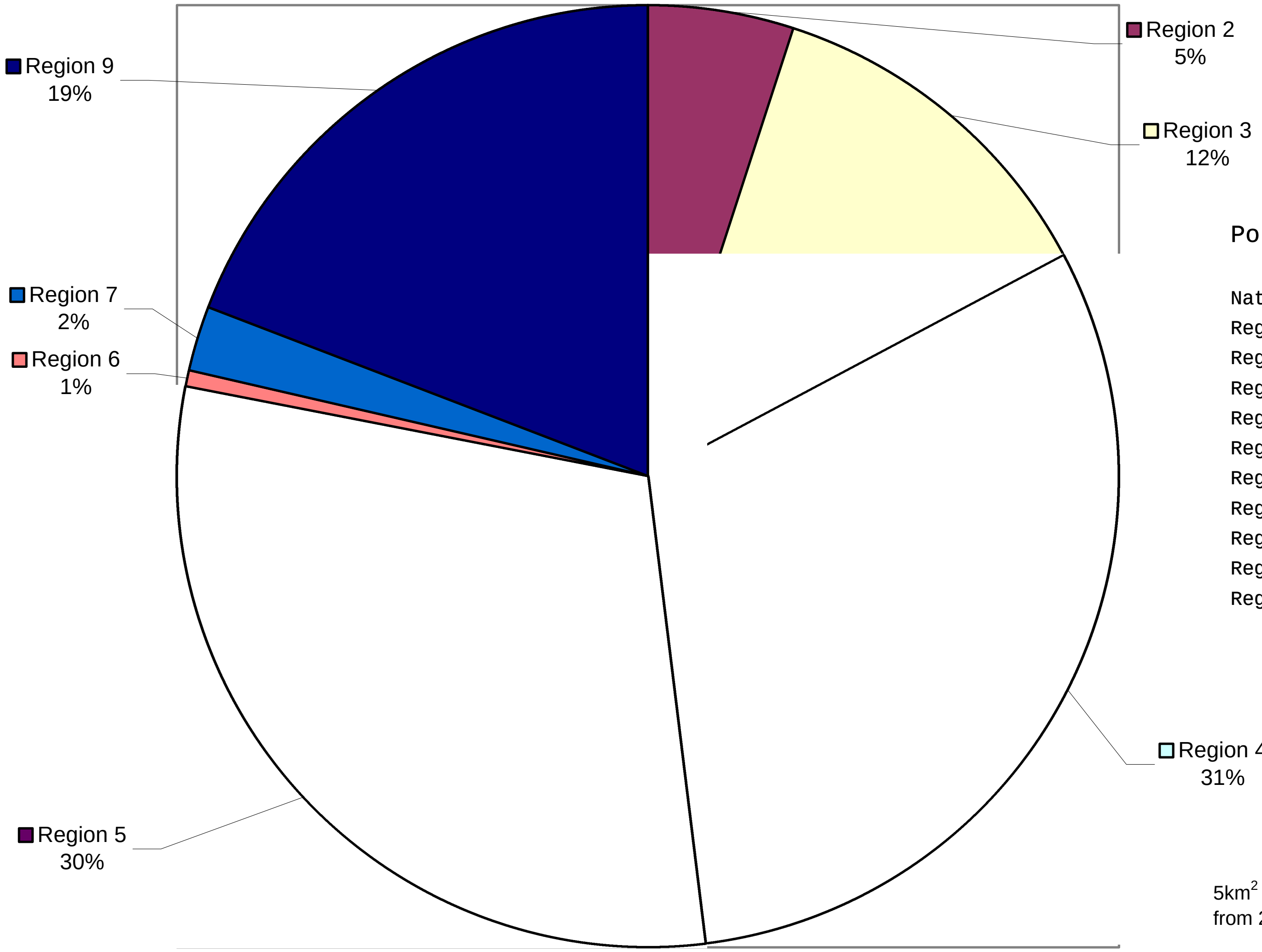
Bias in Pop. Exposed to $PM_{2.5}$ Violations (99-01)



5km[2] Population Grids produced from 2000 Census County Level Data

Grid Method

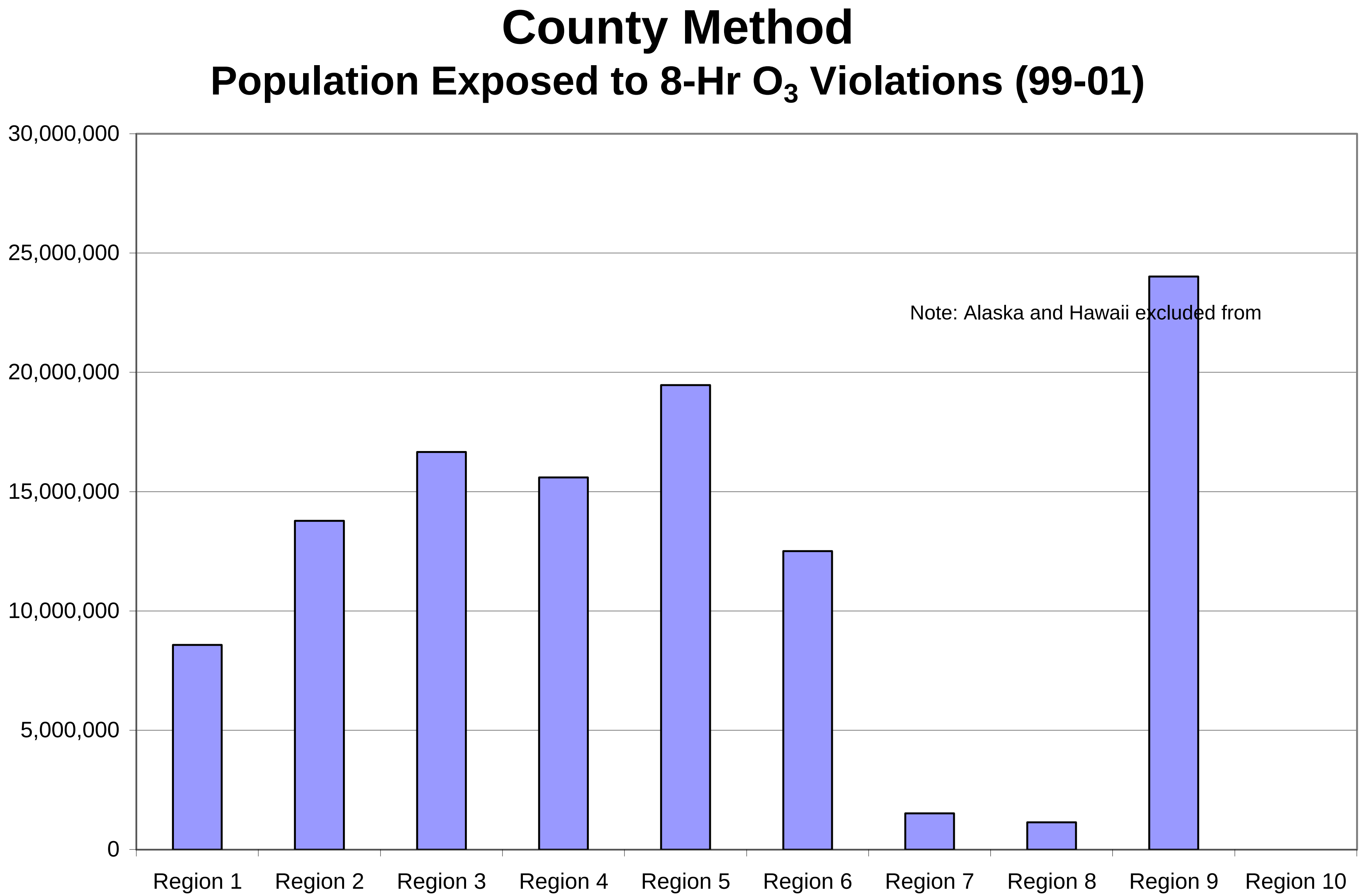
Population Exposed to $PM_{2.5}$ Violations (99-01)



Population Exposed

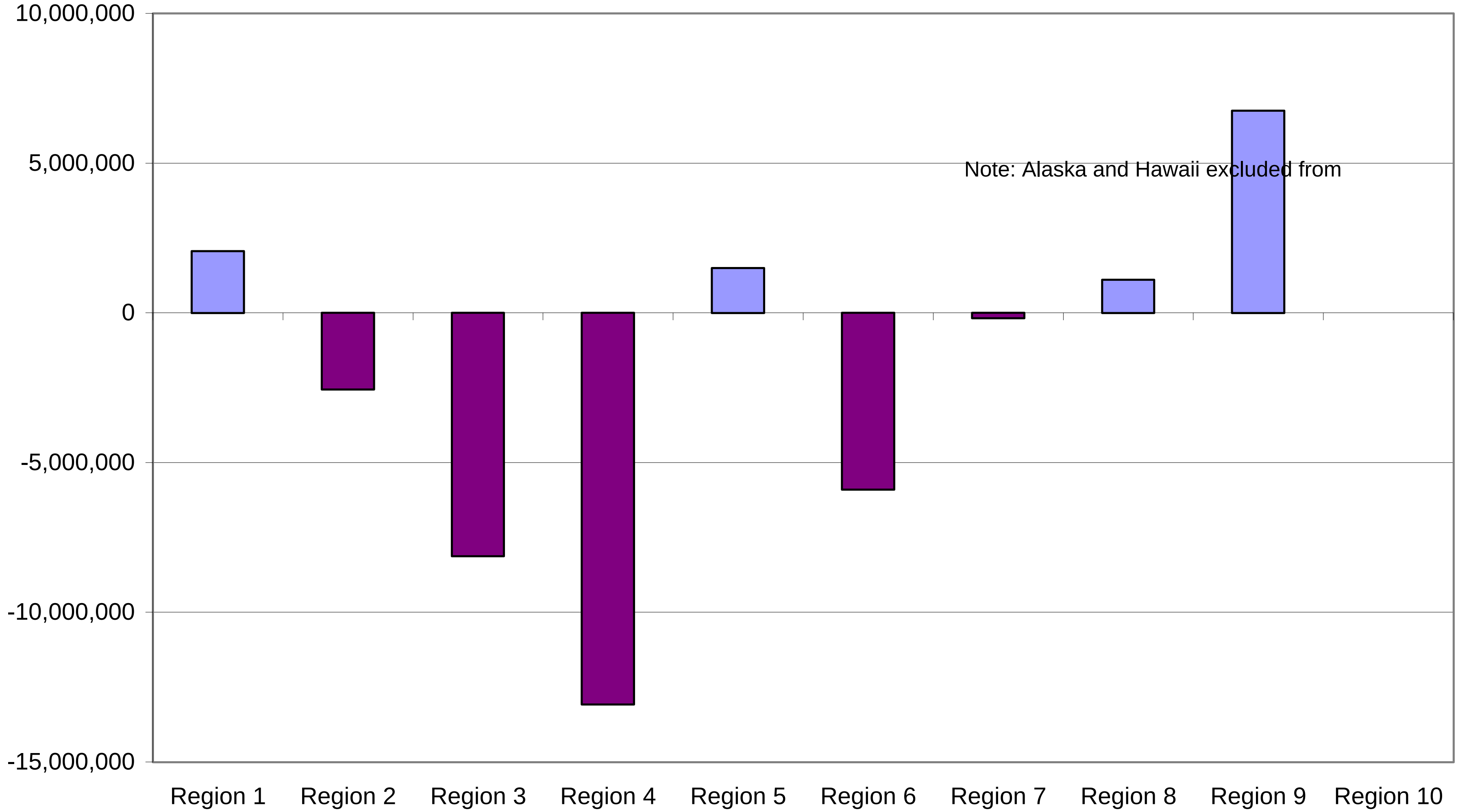
National	89,876,728
Region 1	109,636
Region 2	4,323,329
Region 3	11,161,493
Region 4	27,617,288
Region 5	26,908,420
Region 6	476,895
Region 7	2,102,564
Region 8	2,037
Region 9	17,175,064
Region 10	0

$5km^2$ Population Grids produced from 2000 Census County Level Data

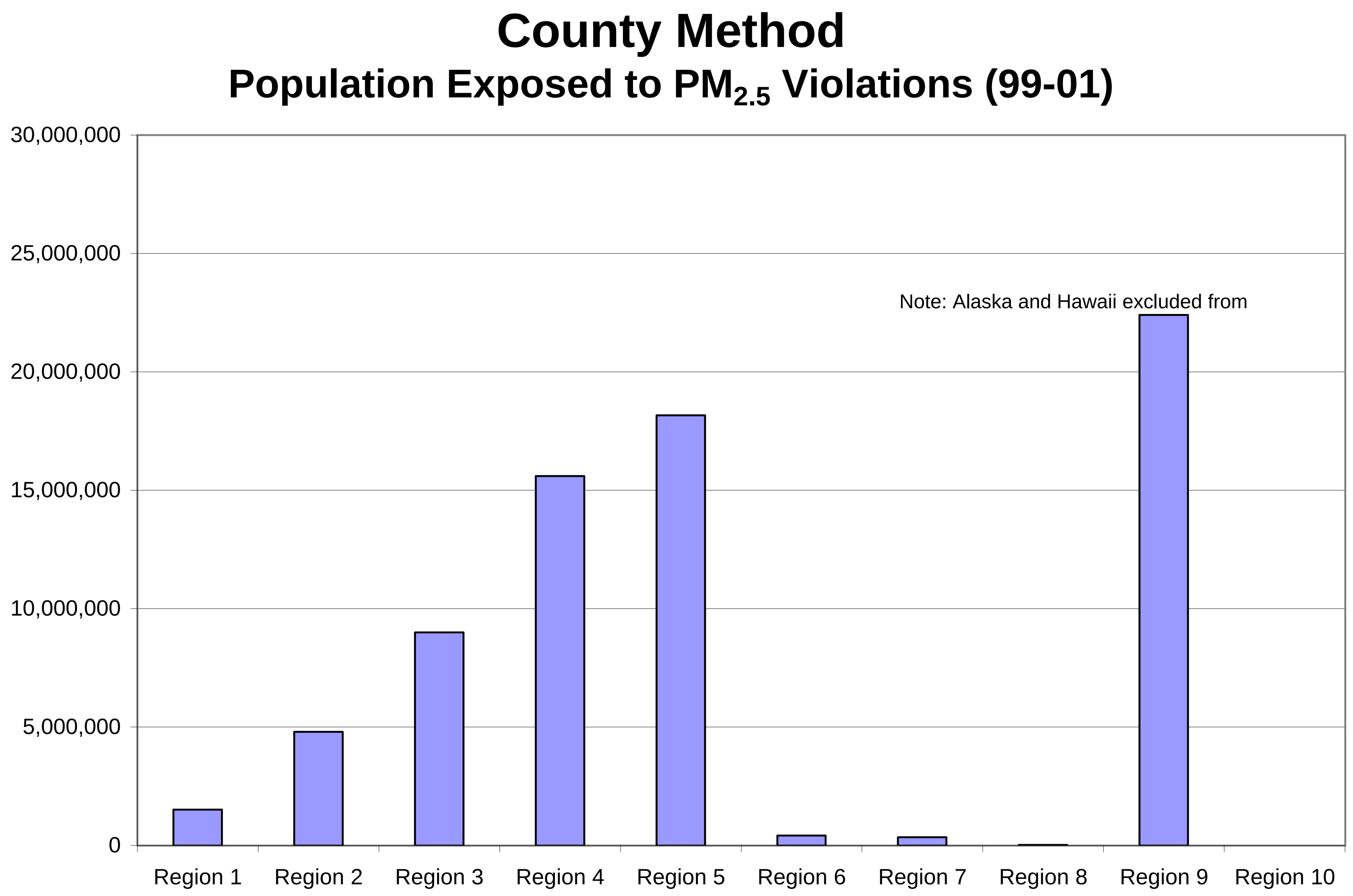

County Method
Population Exposed to 8-Hr O3 Violations (99-01)
30,000,000
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
Note: Alaska and Hawaii excluded from
Region 1
Region 2
Region 3
Region 4
Region 5
Region 6
Region 7
Region 8
Region 9
Region 10

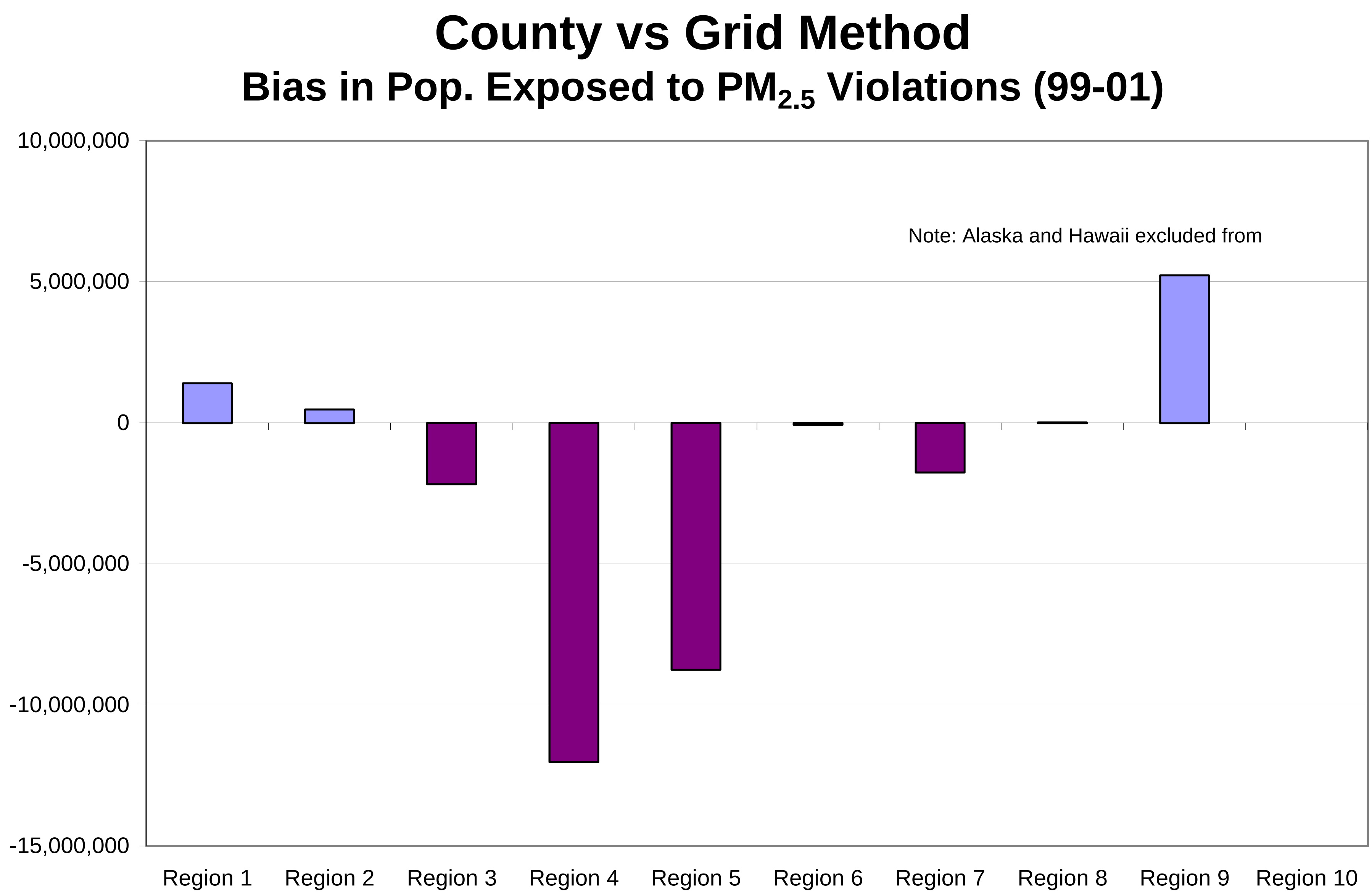
County vs Grid Method

Bias in Pop. Exposed to 8-Hr O_3 Violations (99-01)

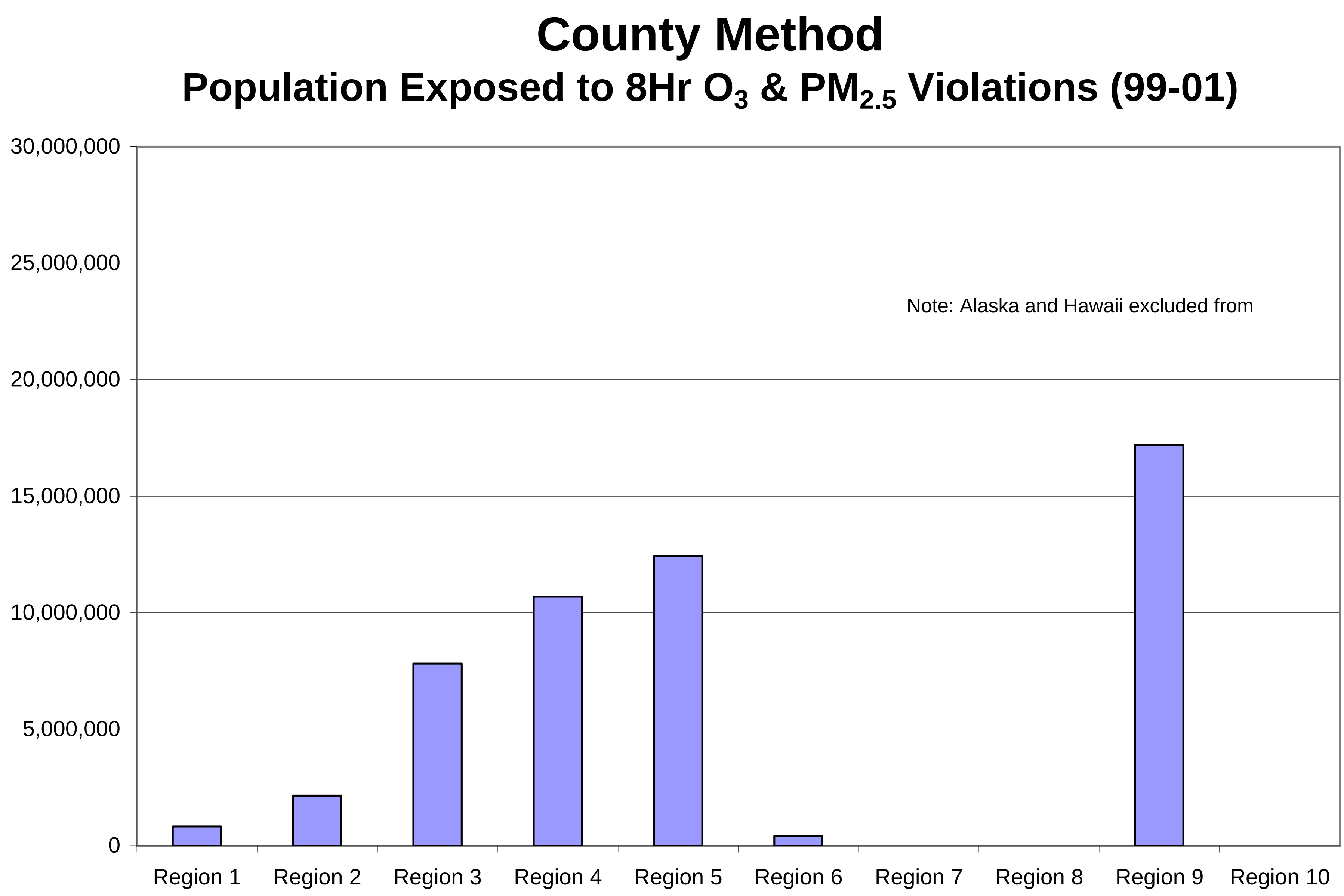


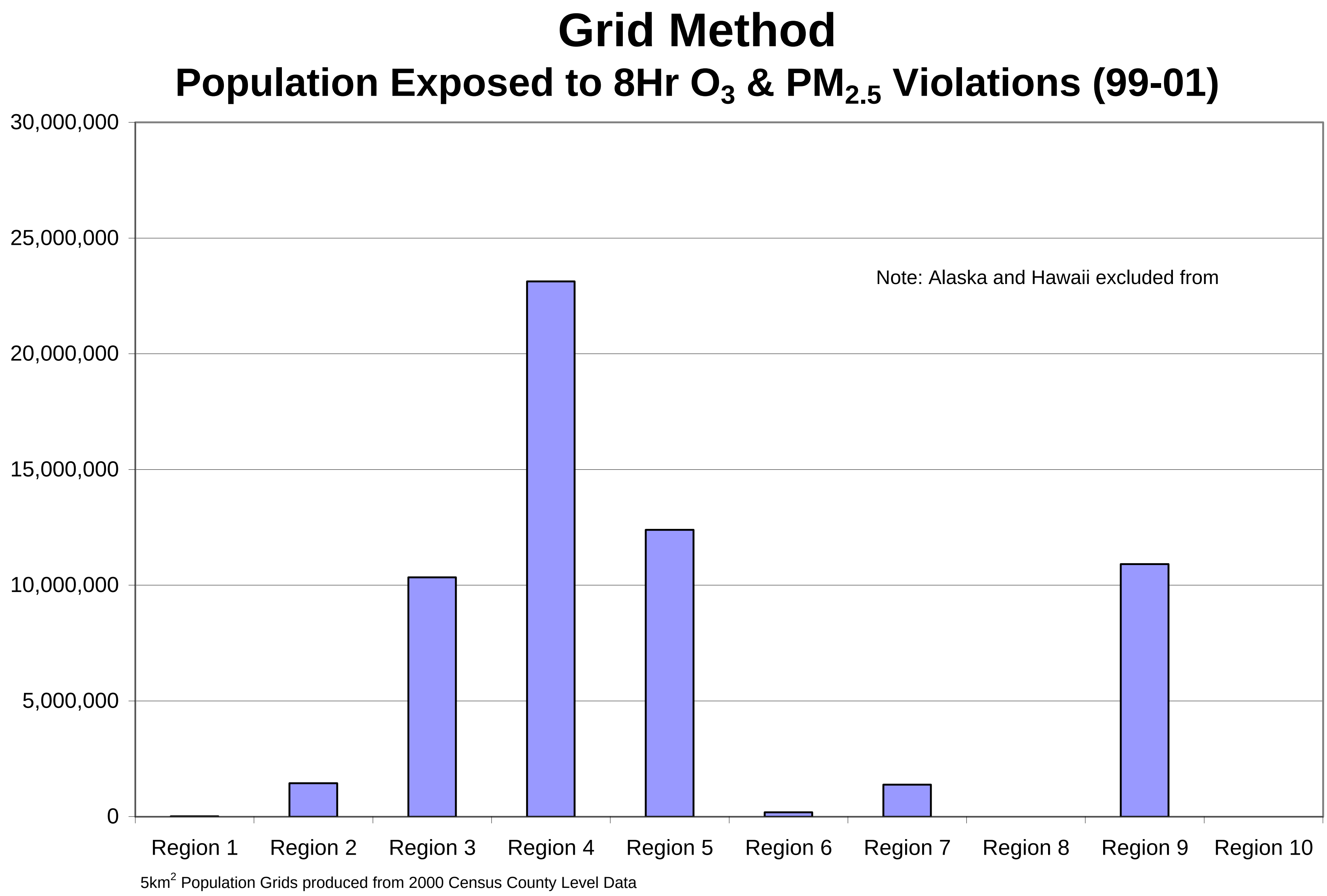
5km^2 Population Grids produced from 2000 Census County Level Data

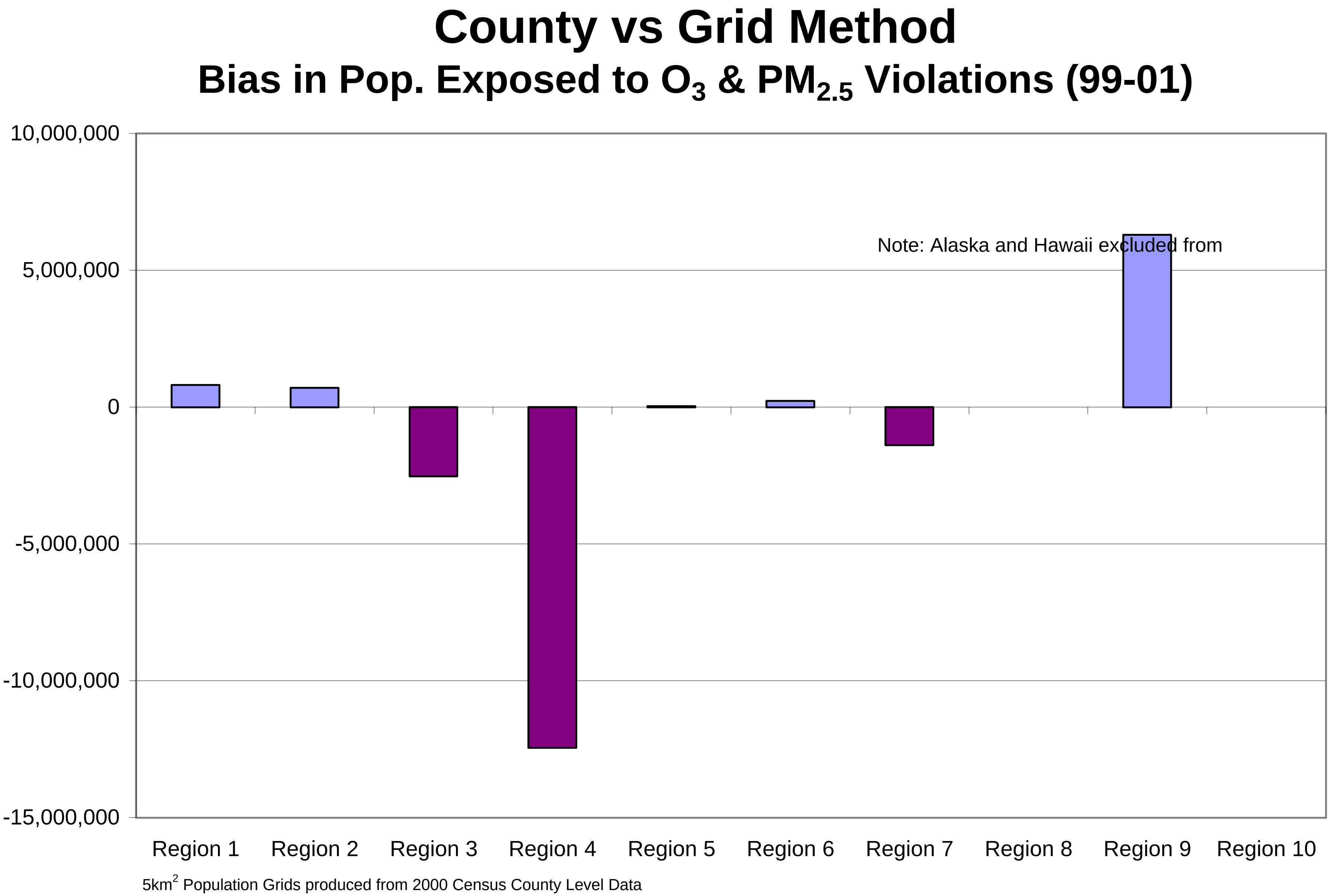

County Method
Population Exposed to PM2.5 Violations (99-01)
30,000,000
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
Note: Alaska and Hawaii excluded from
Region 1
Region 2
Region 3
Region 4
Region 5
Region 6
Region 7
Region 8
Region 9
Region 10



$5km^2$ Population Grids produced from 2000 Census County Level Data


County Method
Population Exposed to 8Hr O3 & PM2.5 Violations (99-01)
30,000,000
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
Note: Alaska and Hawaii excluded from
Region 1
Region 2
Region 3
Region 4
Region 5
Region 6
Region 7
Region 8
Region 9
Region 10

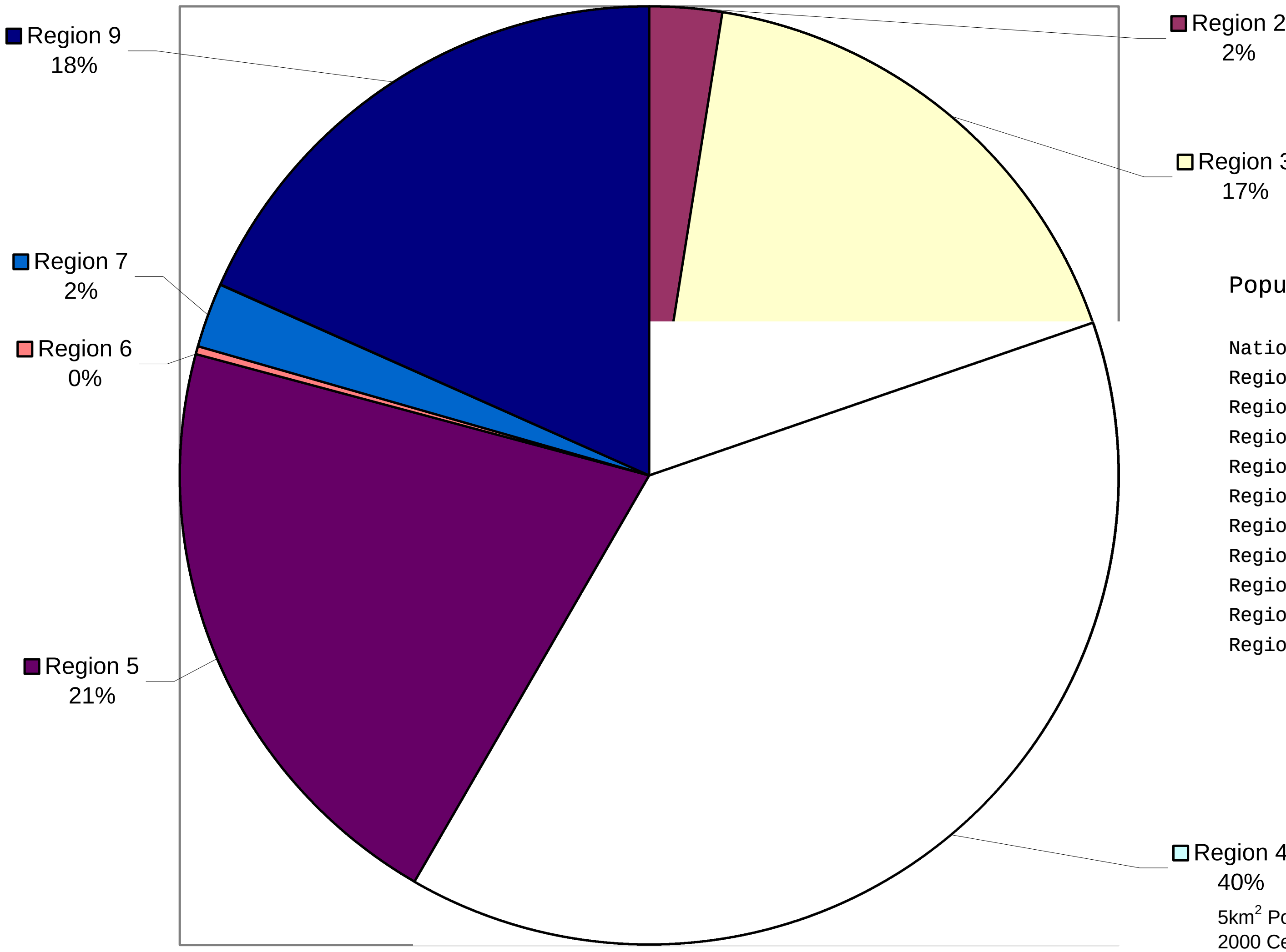

Grid Method
Population Exposed to 8Hr O3 & PM2.5 Violations (99-01)
30,000,000
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
Note: Alaska and Hawaii excluded from
Region 1
Region 2
Region 3
Region 4
Region 5
Region 6
Region 7
Region 8
Region 9
Region 10
5km2 Population Grids produced from 2000 Census County Level Data



County vs Grid Method
Bias in Pop. Exposed to O3 & PM2.5 Violations (99-01)
10,000,000
5,000,000
0
-5,000,000
-10,000,000
-15,000,000
Note: Alaska and Hawaii excluded from
Region 1
Region 2
Region 3
Region 4
Region 5
Region 6
Region 7
Region 8
Region 9
Region 10
5km2 Population Grids produced from 2000 Census County Level Data

Grid Method

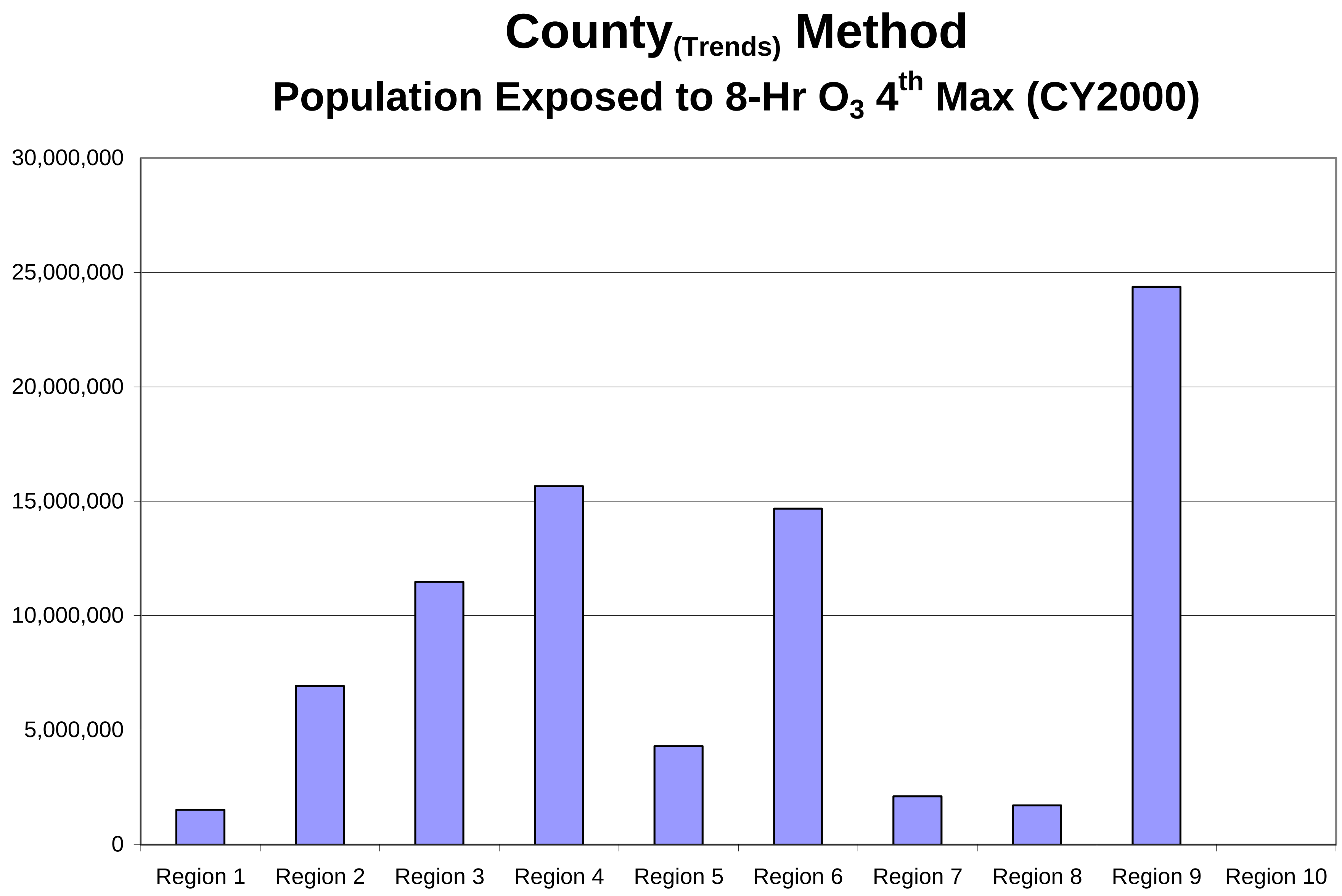
Population Exposed to 8Hr O_3 & $PM_{2.5}$ Violations (99-01)

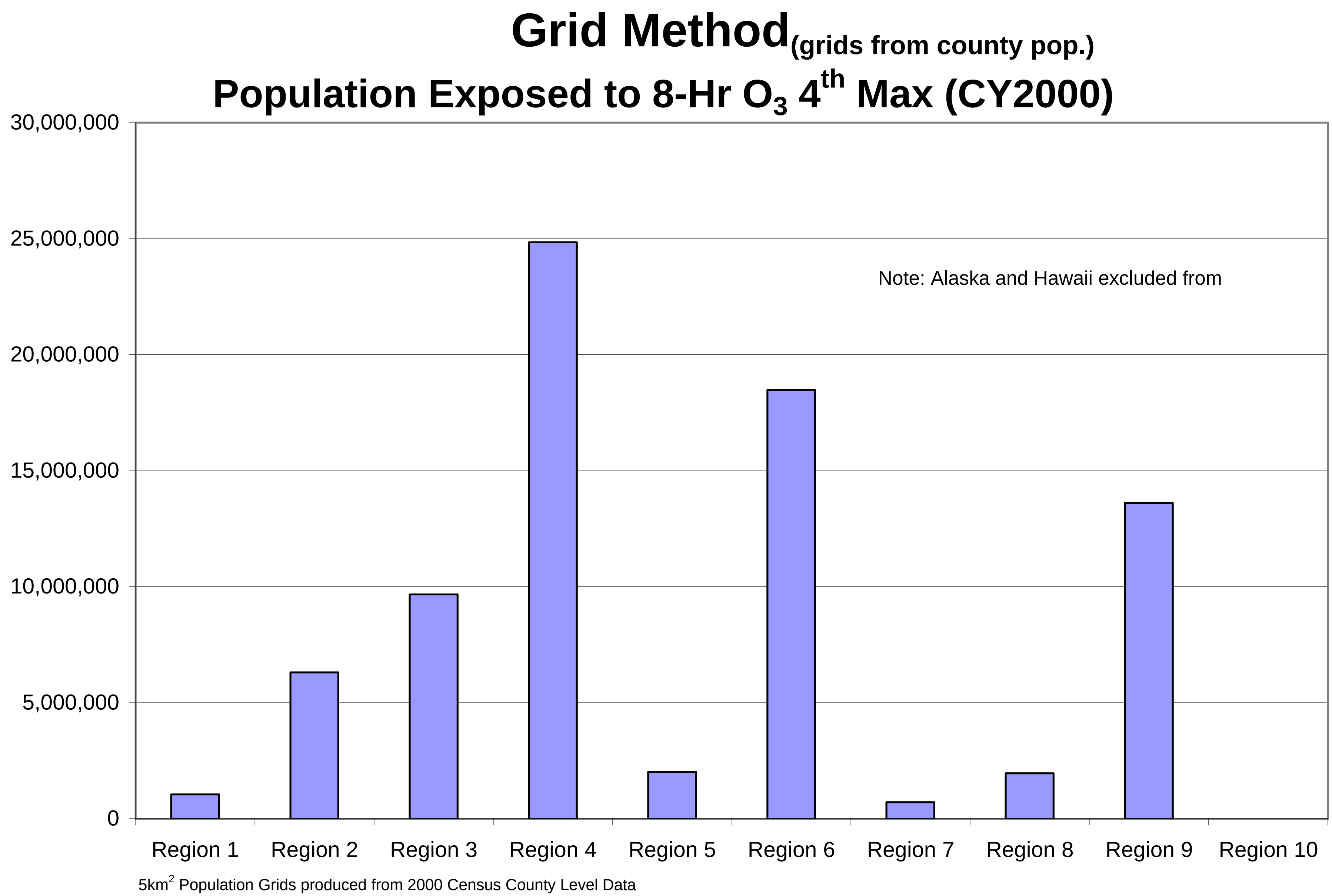


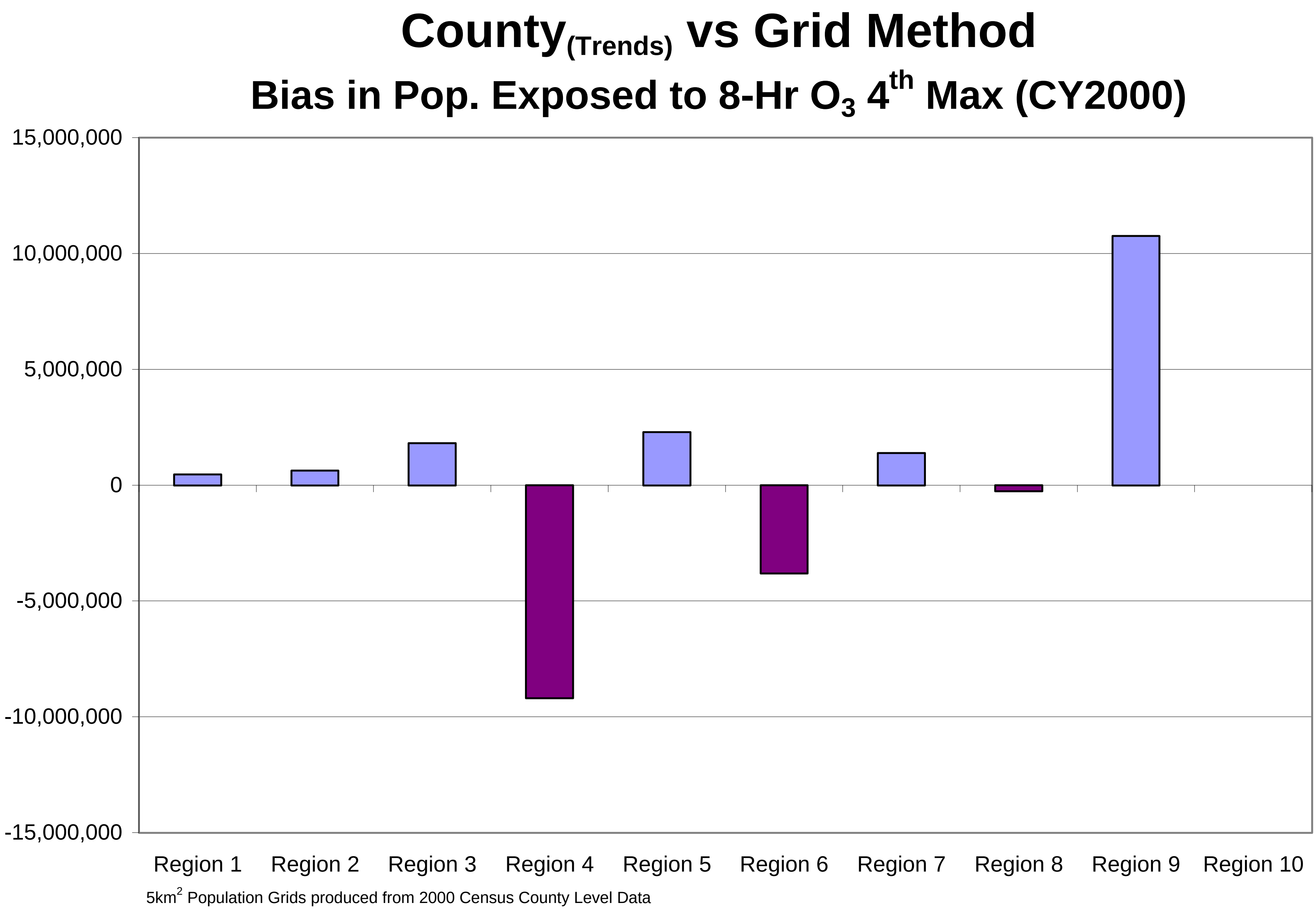
Population Exposed

National	59,789,604
Region 1	12,759
Region 2	1,444,527
Region 3	10,335,233
Region 4	23,130,188
Region 5	12,393,764
Region 6	188,137
Region 7	1,378,794
Region 8	0
Region 9	10,906,200
Region 10	0

$5km^2$ Population Grids produced from 2000 Census County Level Data

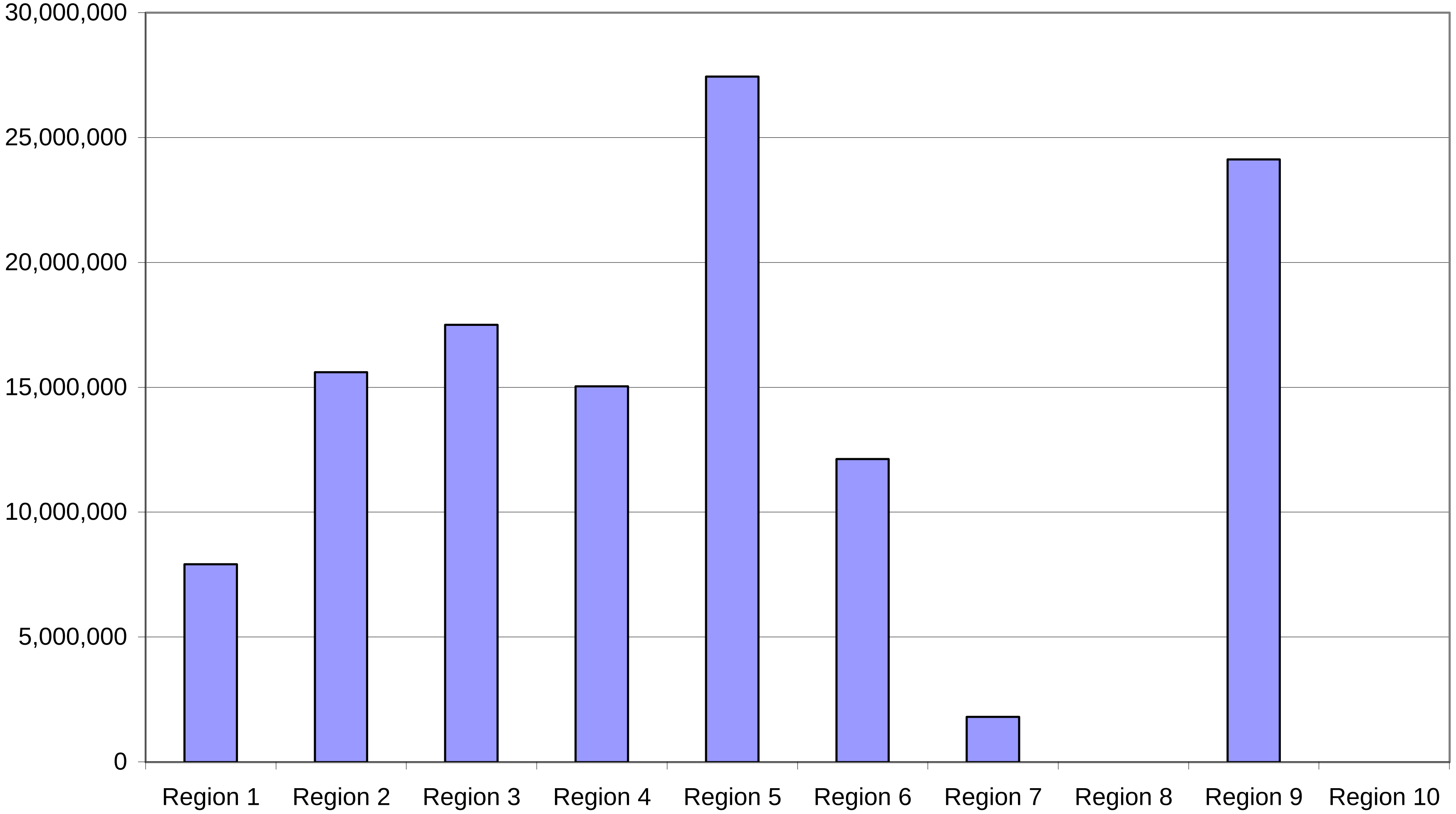

County(Trends) Method
Population Exposed to 8-Hr O_3 4th Max (CY2000)
30,000,000
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
Region 1
Region 2
Region 3
Region 4
Region 5
Region 6
Region 7
Region 8
Region 9
Region 10

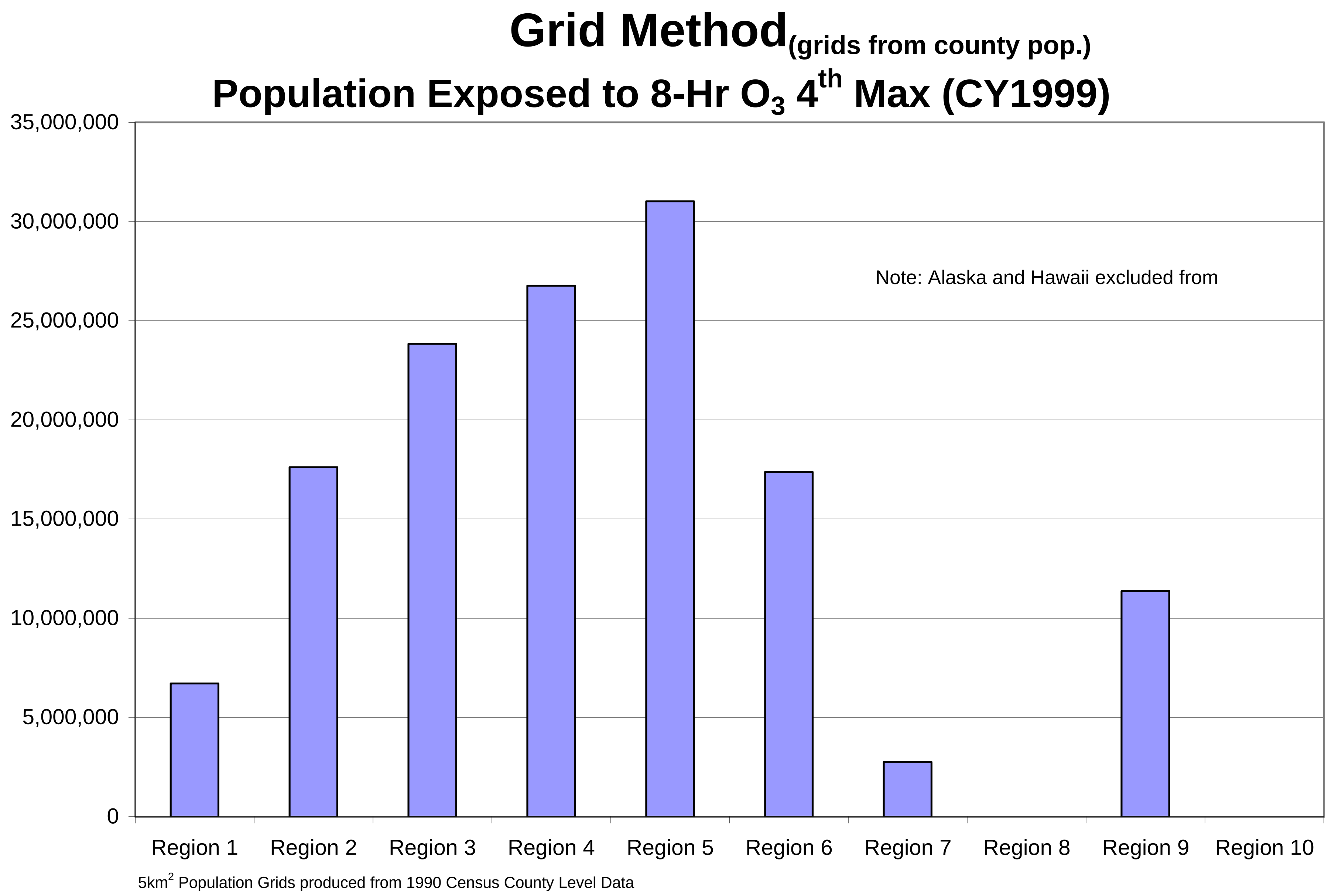

Grid Method(grids from county pop.)
Population Exposed to 8-Hr O_3 4th Max (CY2000)
30,000,000
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
Note: Alaska and Hawaii excluded from
Region 1
Region 2
Region 3
Region 4
Region 5
Region 6
Region 7
Region 8
Region 9
Region 10
5km2 Population Grids produced from 2000 Census County Level Data


County(Trends) vs Grid Method
Bias in Pop. Exposed to 8-Hr O3 4th Max (CY2000)
15,000,000
10,000,000
5,000,000
0
-5,000,000
-10,000,000
-15,000,000
Region 1
Region 2
Region 3
Region 4
Region 5
Region 6
Region 7
Region 8
Region 9
Region 10
5km2 Population Grids produced from 2000 Census County Level Data

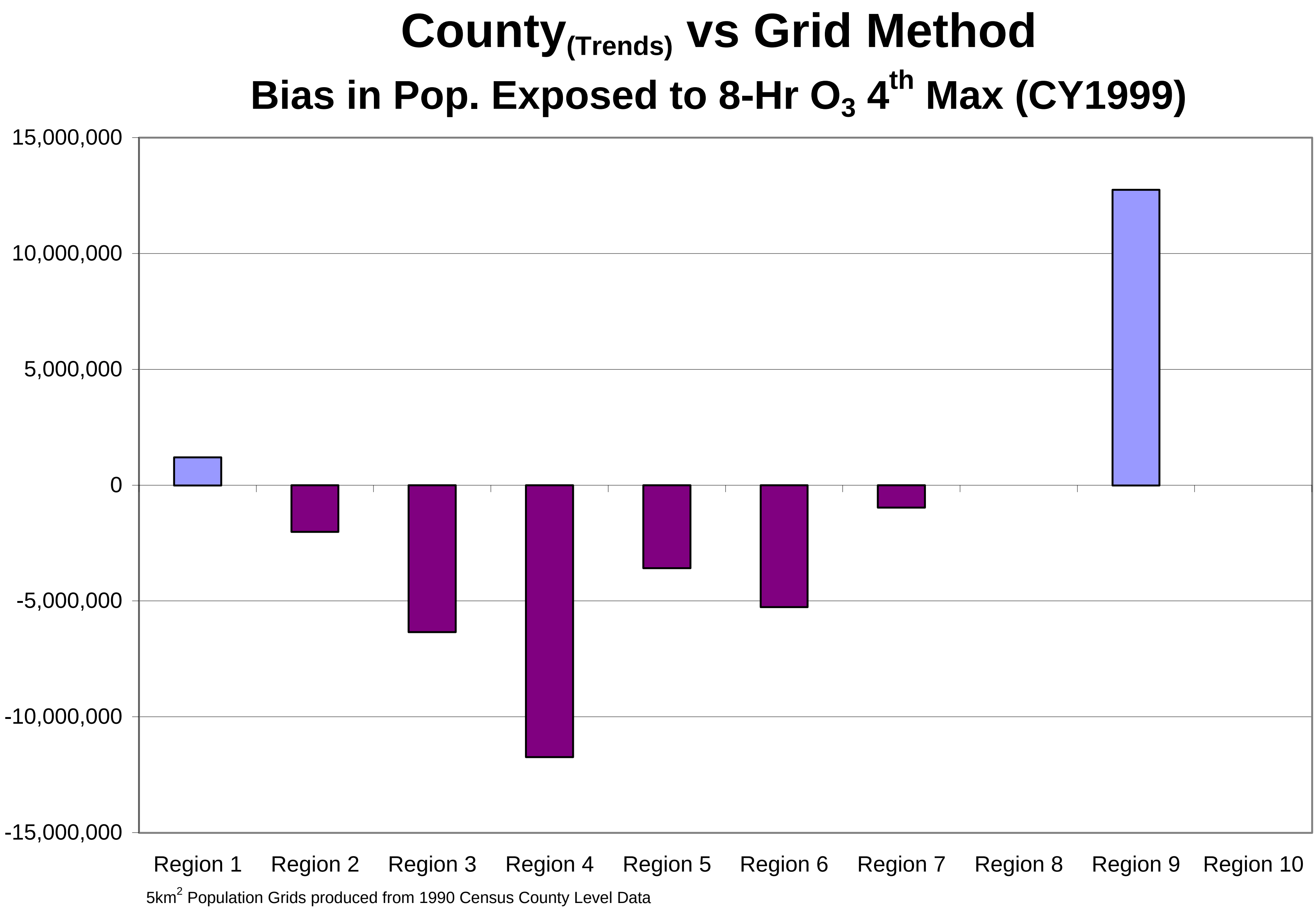
County$_{(Trends)}$ Method

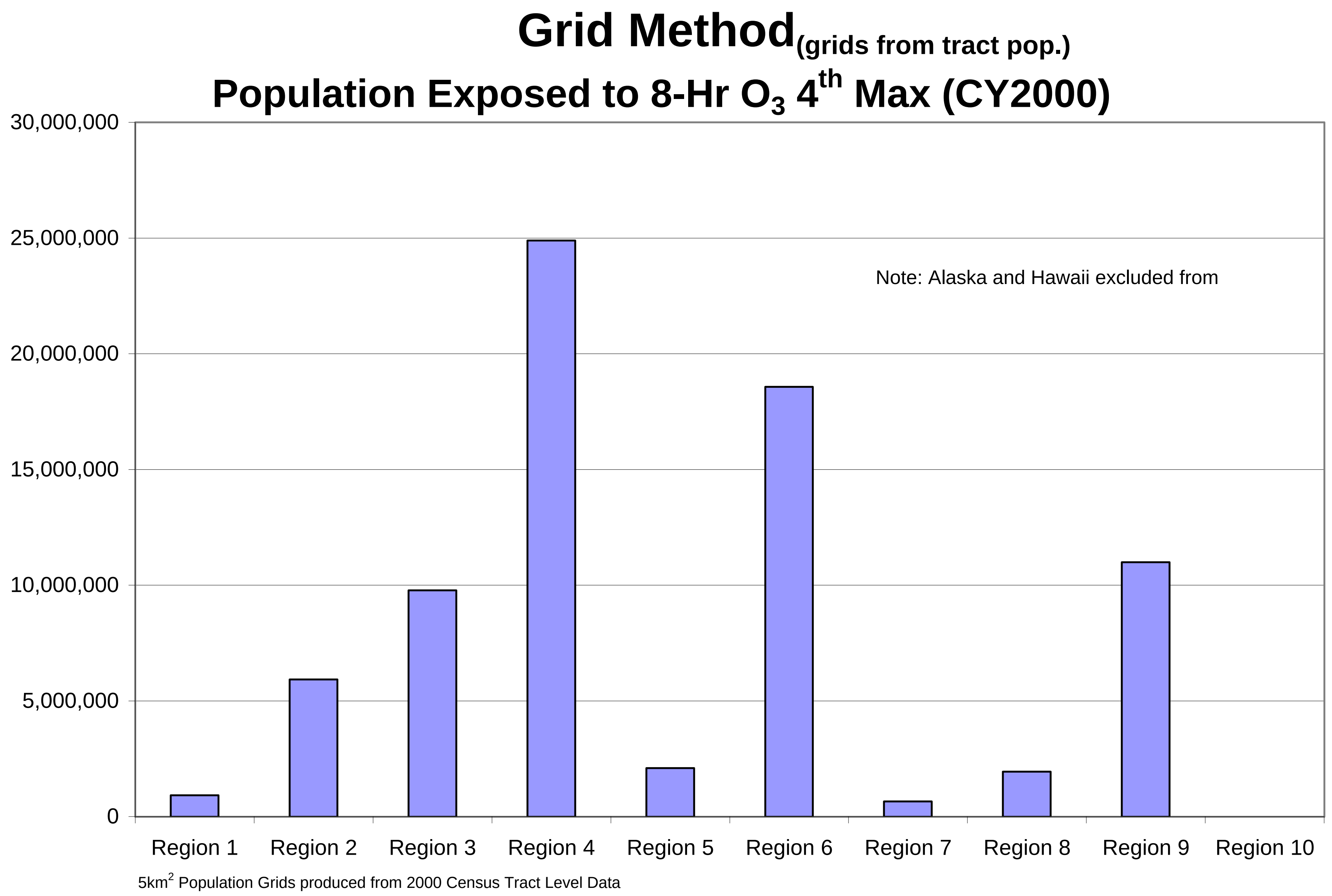
Population Exposed to 8-Hr O_3 4th Max (CY1999)

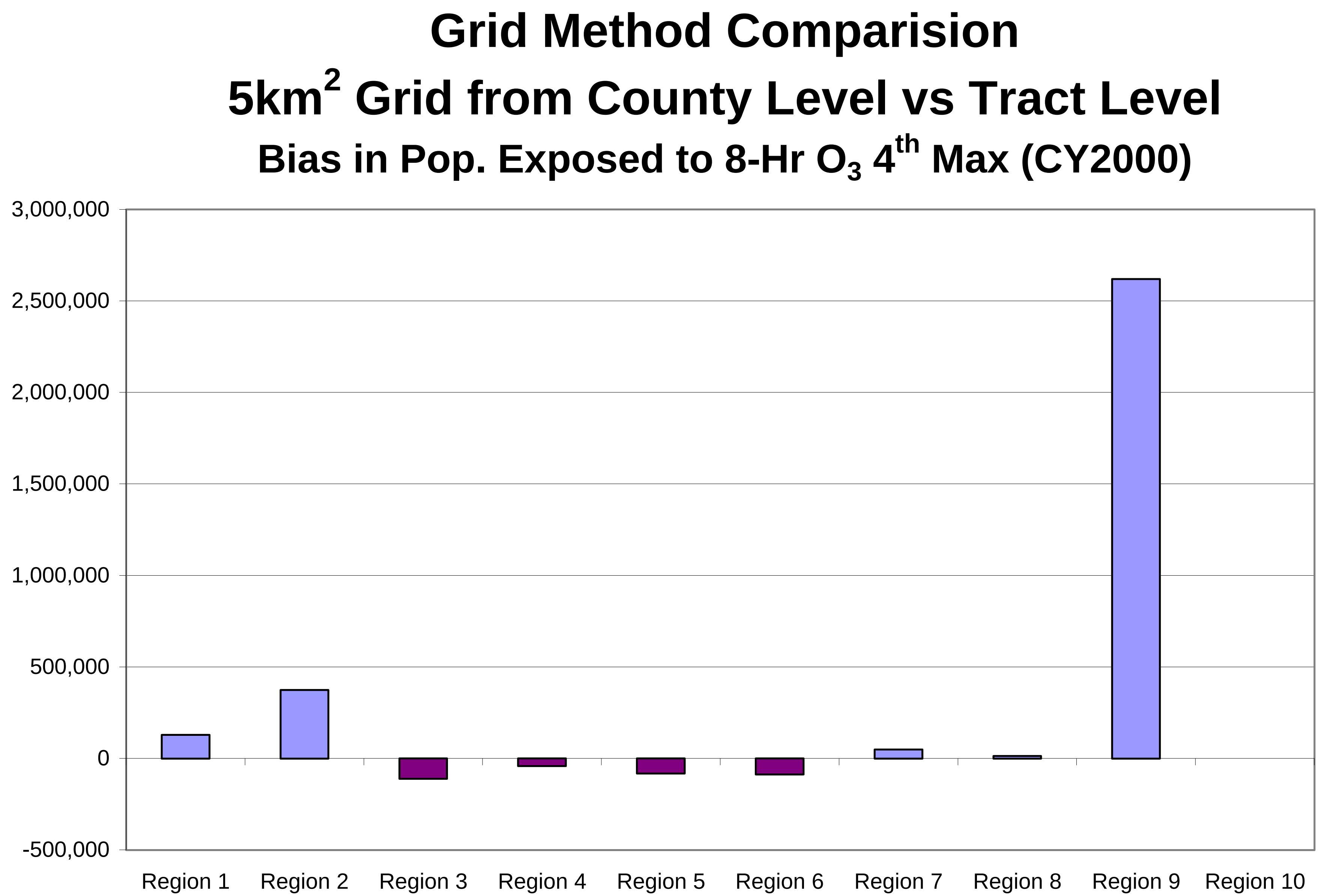




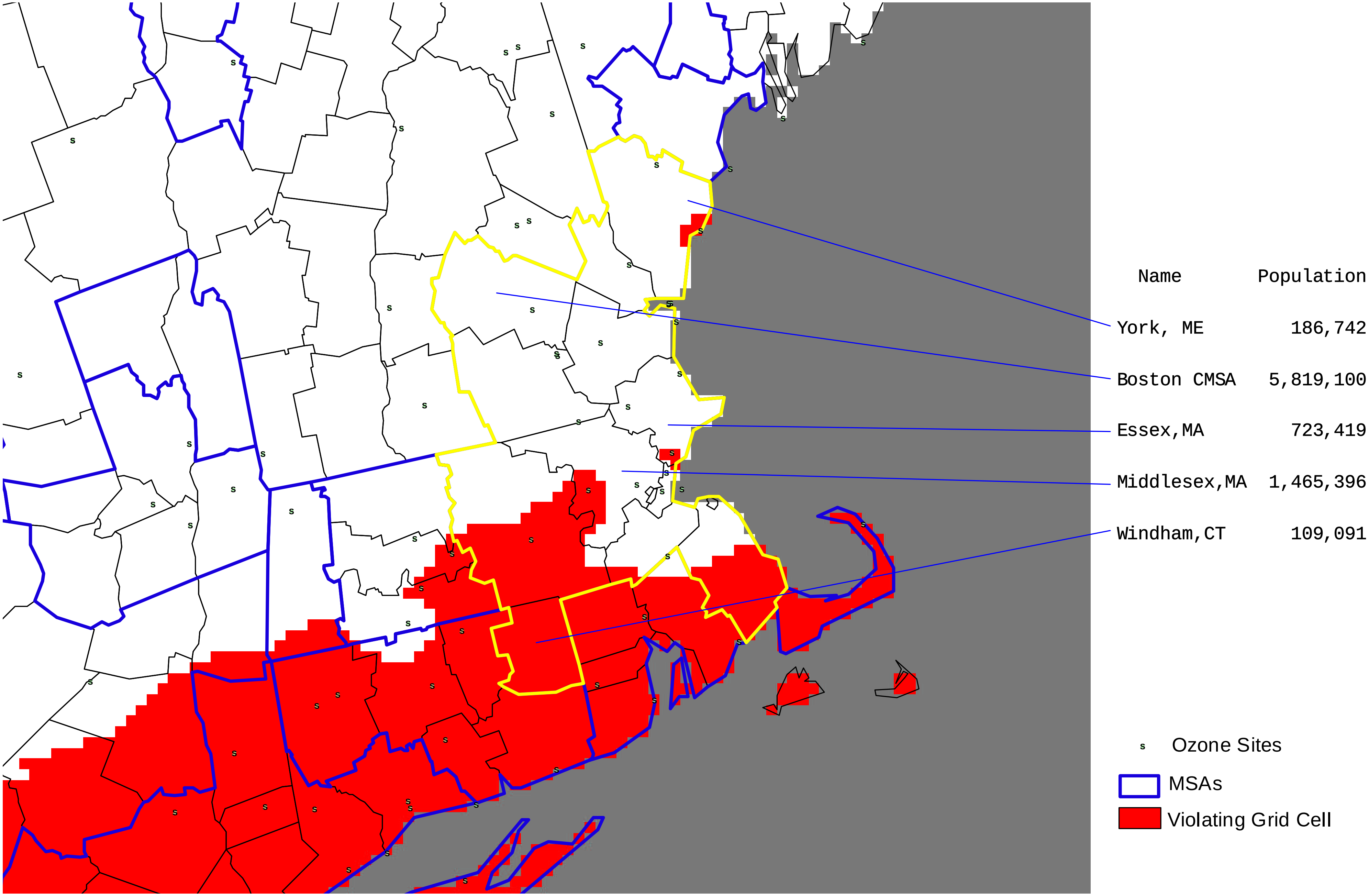
Grid Method(grids from county pop.)
Population Exposed to 8-Hr O_3 4^{th} Max (CY1999)
35,000,000
30,000,000
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
Note: Alaska and Hawaii excluded from
Region 1
Region 2
Region 3
Region 4
Region 5
Region 6
Region 7
Region 8
Region 9
Region 10
5km^2 Population Grids produced from 1990 Census County Level Data


County(Trends) vs Grid Method
Bias in Pop. Exposed to 8-Hr O3 4th Max (CY1999)
15,000,000
10,000,000
5,000,000
0
-5,000,000
-10,000,000
-15,000,000
Region 1
Region 2
Region 3
Region 4
Region 5
Region 6
Region 7
Region 8
Region 9
Region 10
5km2 Population Grids produced from 1990 Census County Level Data


Grid Method(grids from tract pop.)
Population Exposed to 8-Hr O_3 4th Max (CY2000)
30,000,000
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
Note: Alaska and Hawaii excluded from
Region 1
Region 2
Region 3
Region 4
Region 5
Region 6
Region 7
Region 8
Region 9
Region 10
5km2 Population Grids produced from 2000 Census Tract Level Data

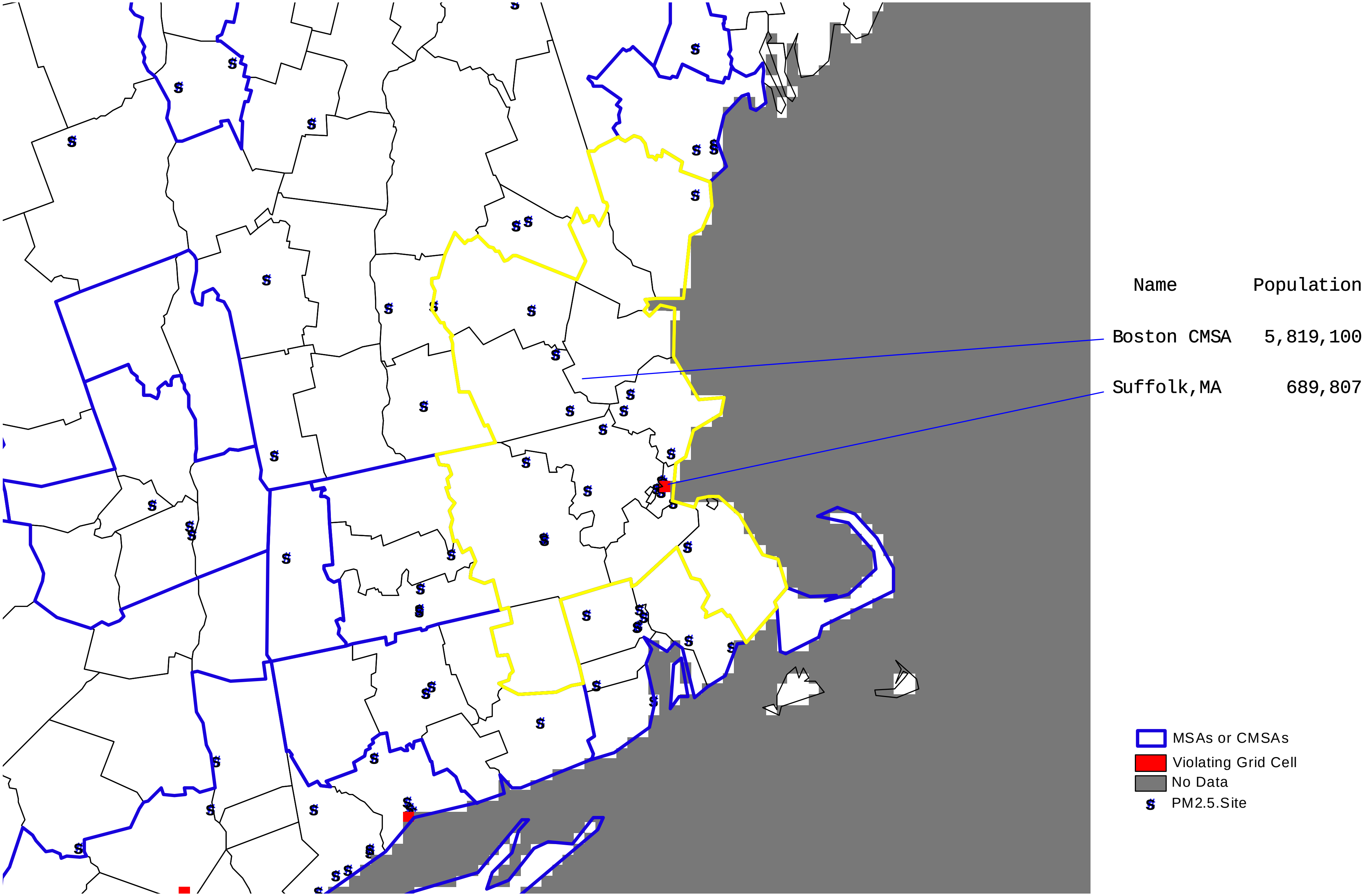

Grid Method Comparision
5km2 Grid from County Level vs Tract Level
Bias in Pop. Exposed to 8-Hr O3 4th Max (CY2000)
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
-500,000
Region 1
Region 2
Region 3
Region 4
Region 5
Region 6
Region 7
Region 8
Region 9
Region 10

8-Hr Ozone Violation Grid (99-01) for Northeast with Counties and MSAs Overlaid



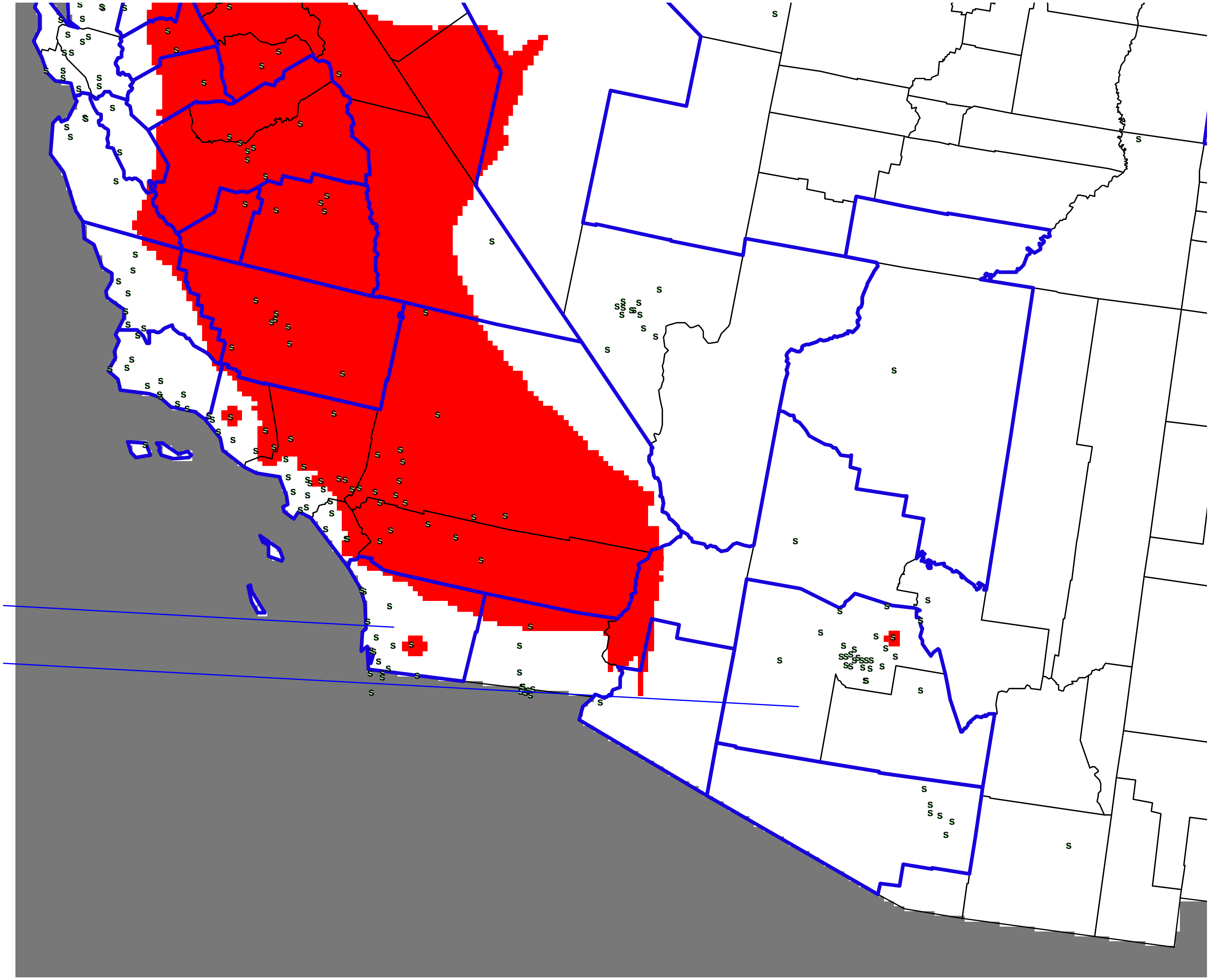
Data obtained from AIRS prior to 2001 certification. Exceptional Events are included. 5 sqkm grid cell used.

PM2.5 Violation Grid (99-01) for Northeast with Counties and MSAs Overlaid



Data obtained from AIRS prior to 2001 certification. Exceptional Events are included. 5 sqkm grid cell used.

8-Hr Ozone Violation Grid (99-01) for West with Counties and MSAs Overlaid



Name	Population
San Diego,CA	2,813,833
Maricopa,AZ	3,072,149

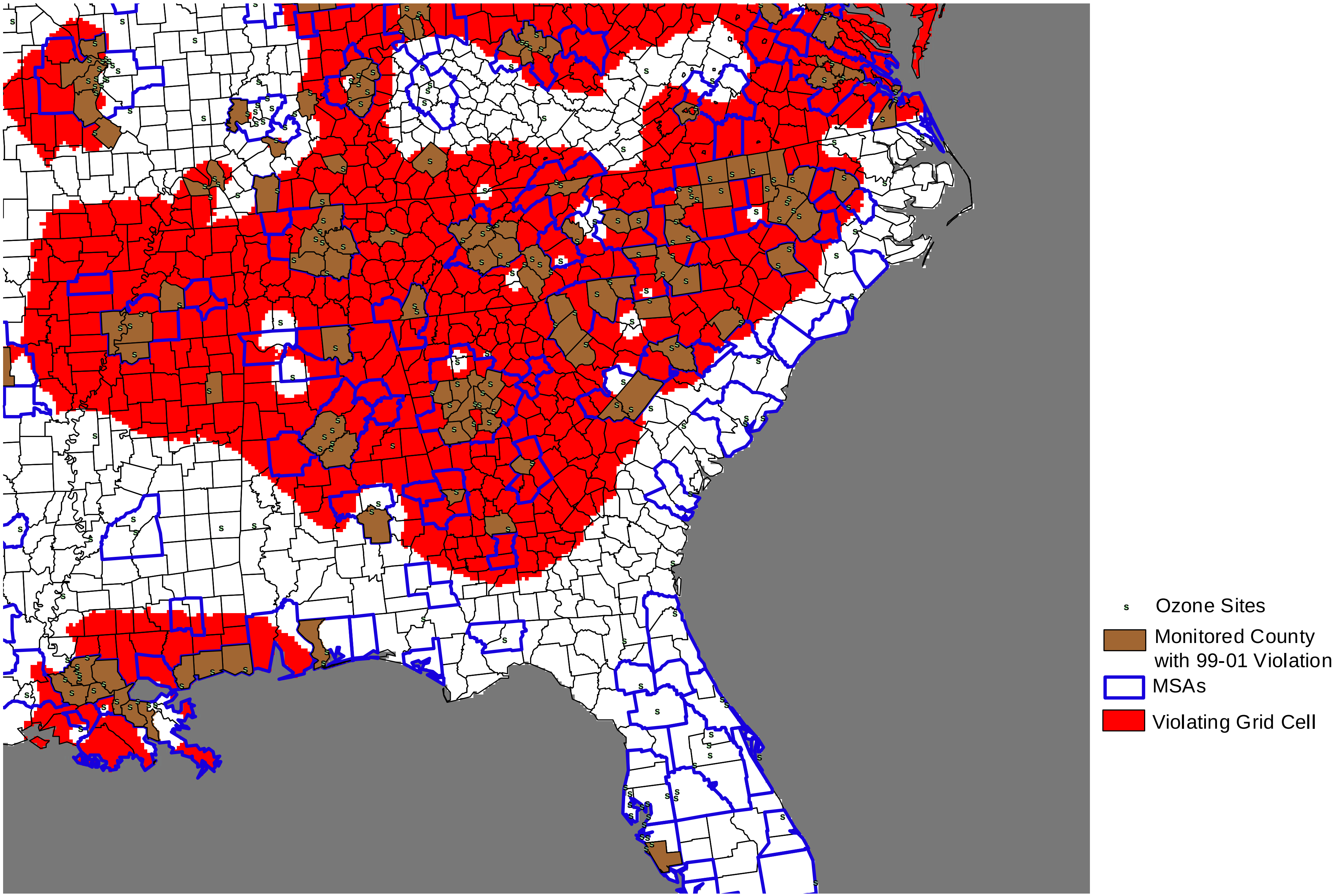
s Ozone Sites

MSAs

Violating Grid Cell

Data obtained from AIRS prior to 2001 certification. Exceptional Events are included. 5 sqkm grid cell used.

8-Hr Ozone Violation Grid (99-01) for Southeast with Counties and MSAs Overlaid

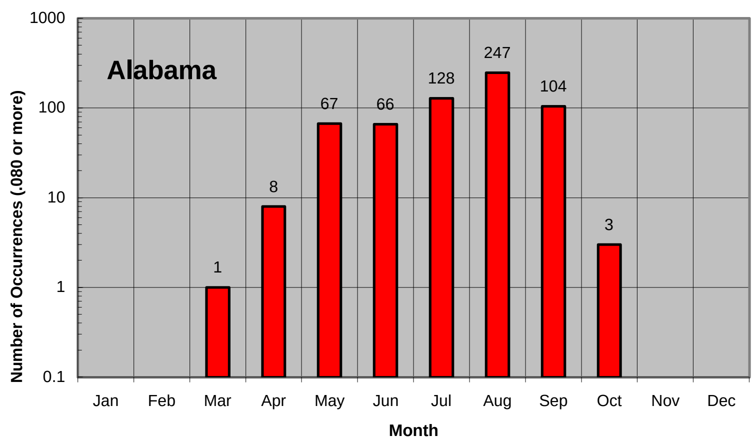


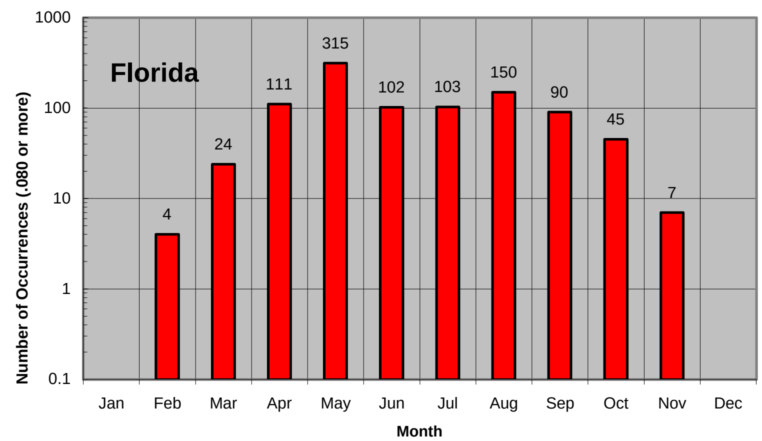
Data obtained from AIRS prior to 2001 certification. Exceptional Events are included. 5 sqkm grid cell used.

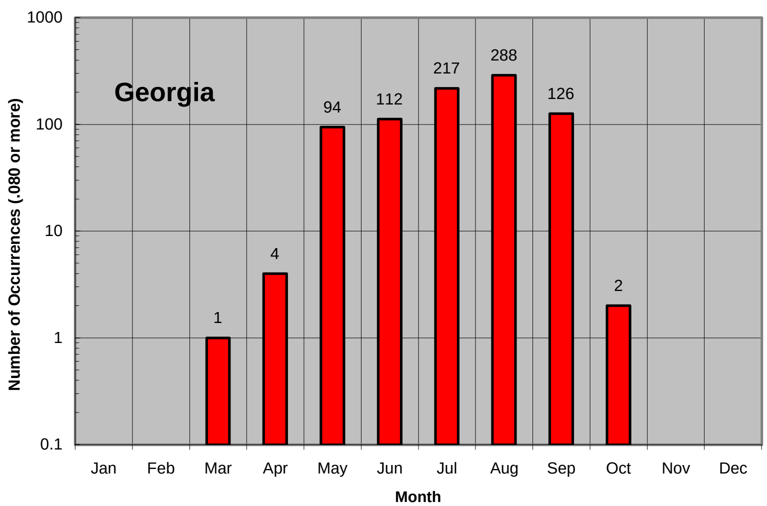
Appendix C

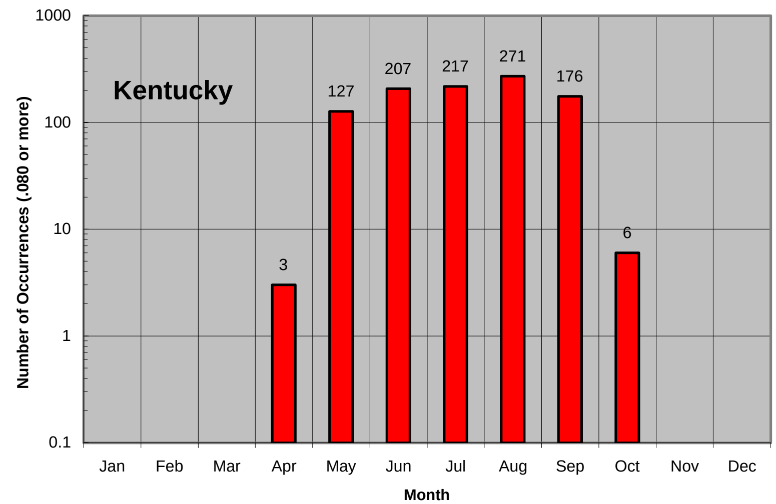
Reassessment of O_3 Monitoring Seasons for Region 4

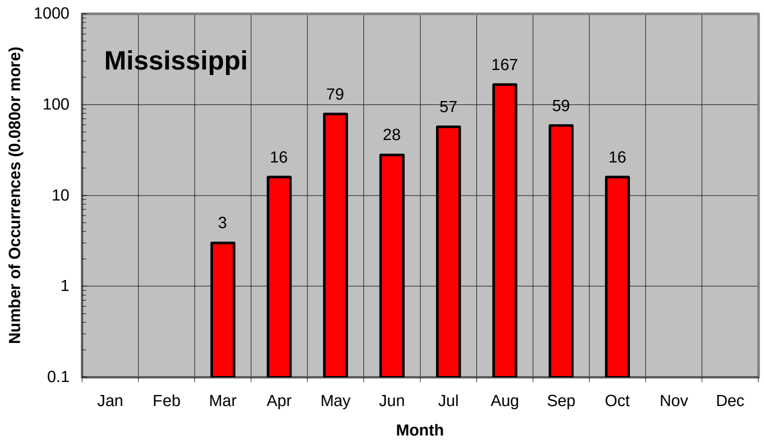
Supporting documentation for Section V.


Alabama
1000
100
10
1
0.1
Number of Occurrences (.080 or more)
1
8
67
66
128
247
104
3
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month

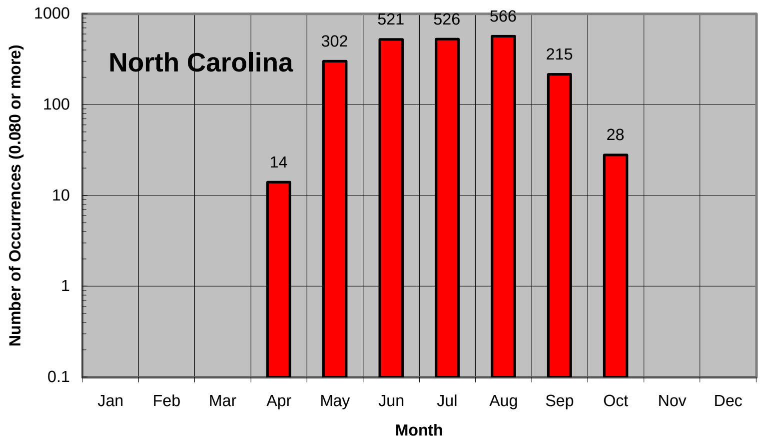

Florida
1000
100
10
1
0.1
Number of Occurrences (.080 or more)
4
24
111
315
102
103
150
90
45
7
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month


Georgia
1000
100
10
1
0.1
Number of Occurrences (.080 or more)
1
4
94
112
217
288
126
2
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month

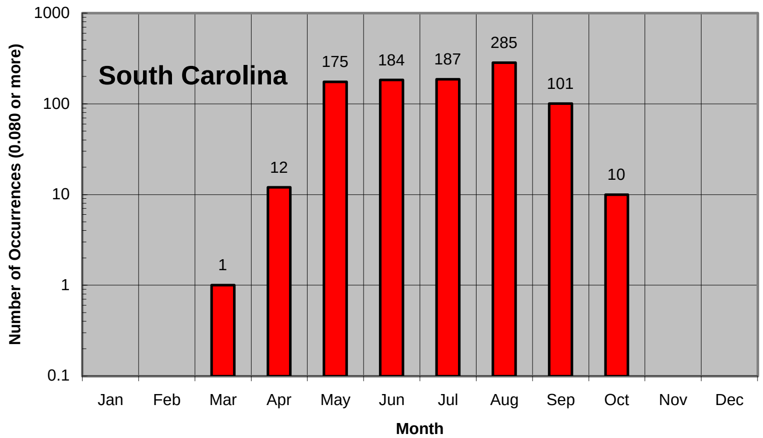

Kentucky
1000
100
10
1
0.1
Number of Occurrences (.080 or more)
3
127
207
217
271
176
6
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month



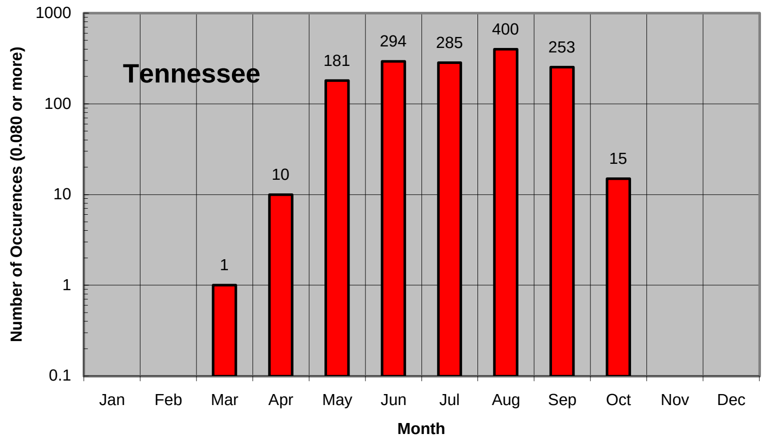
Mississippi
1000
100
10
1
0.1
3
16
79
28
57
167
59
16
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Number of Occurrences (0.080or more)



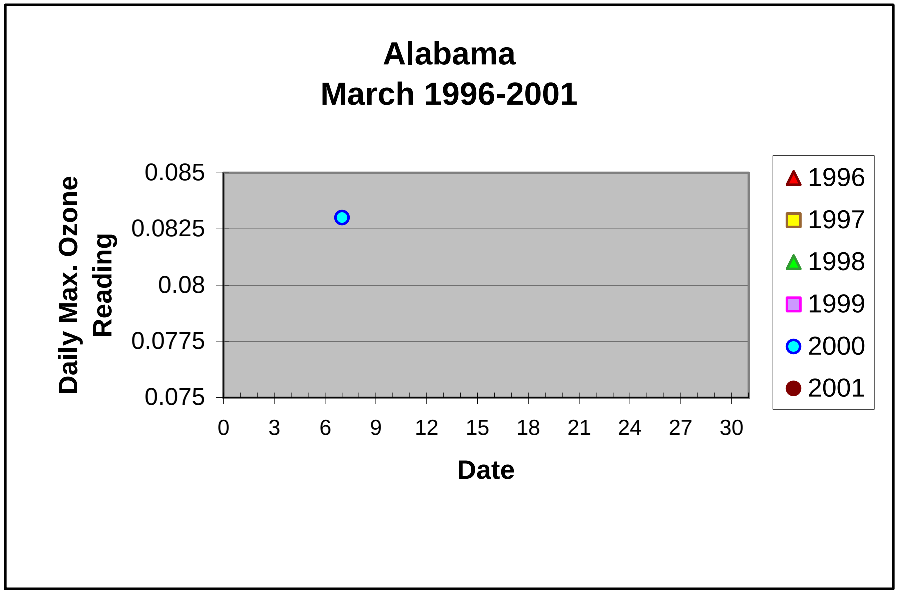
North Carolina
1000
100
10
1
0.1
14
302
521
526
566
215
28
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Number of Occurrences (0.080 or more)

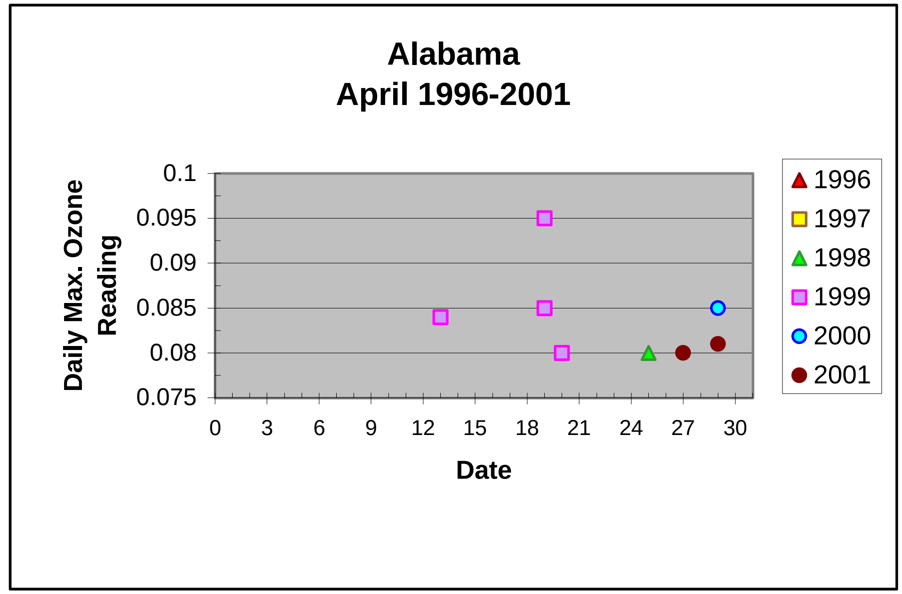


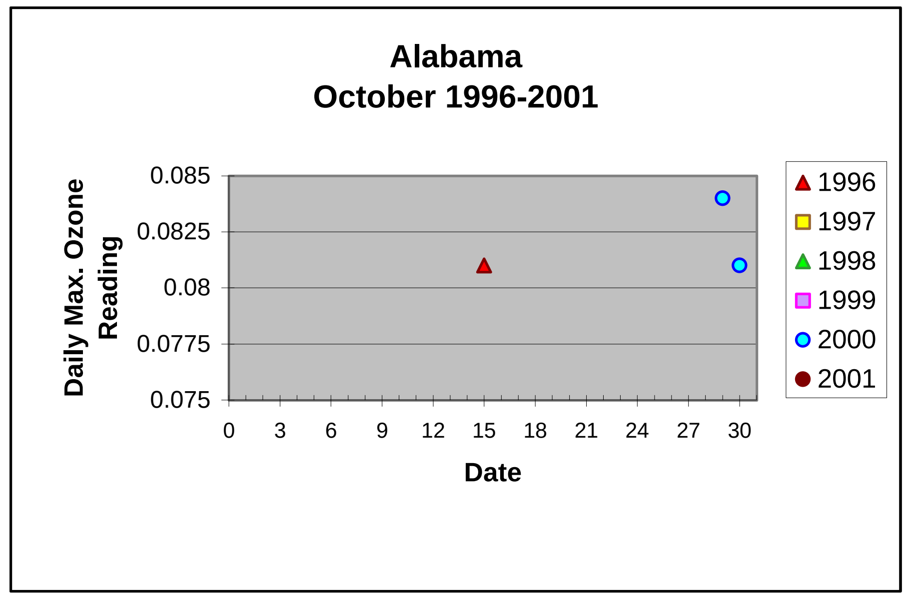
South Carolina
1000
100
10
1
0.1
1
12
175
184
187
285
101
10
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Number of Occurrences (0.080 or more)

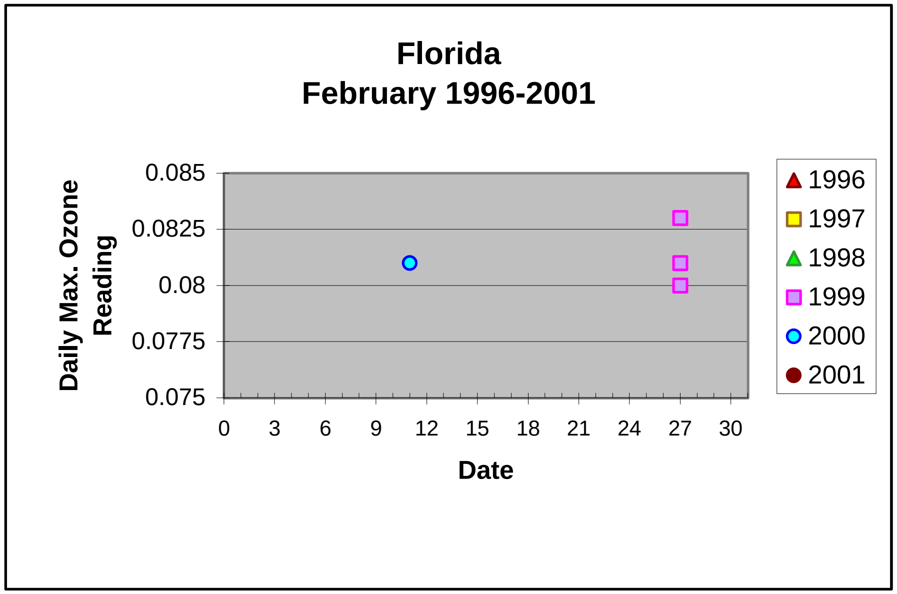


Tennessee
1000
100
10
1
0.1
1
10
181
294
285
400
253
15
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Number of Occurences (0.080 or more)

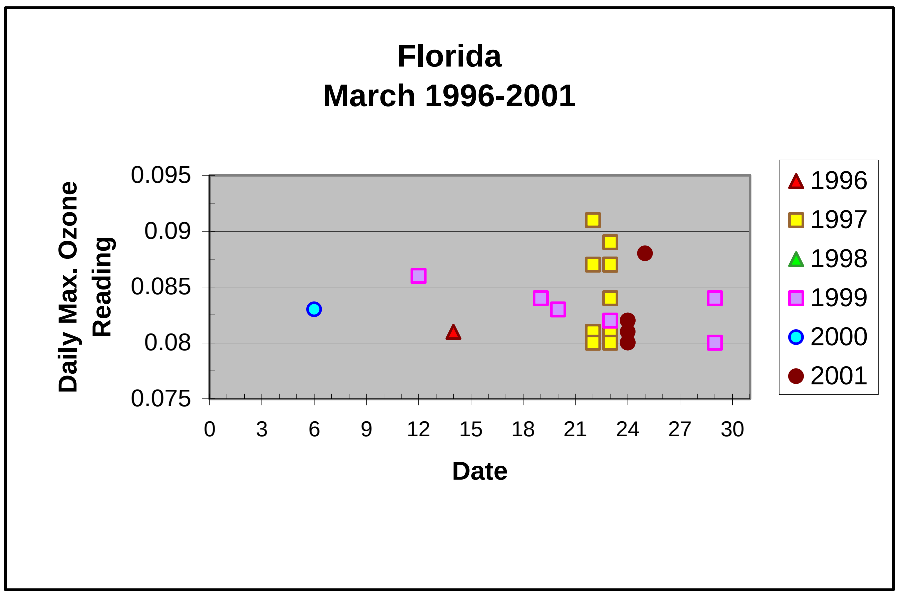

Alabama
March 1996-2001
Daily Max. Ozone Reading
0.085
0.0825
0.08
0.0775
0.075
0 3 6 9 12 15 18 21 24 27 30
Date
1996
1997
1998
1999
2000
2001


Alabama
April 1996-2001
Daily Max. Ozone Reading
0.1
0.095
0.09
0.085
0.08
0.075
0 3 6 9 12 15 18 21 24 27 30
Date
1996
1997
1998
1999
2000
2001

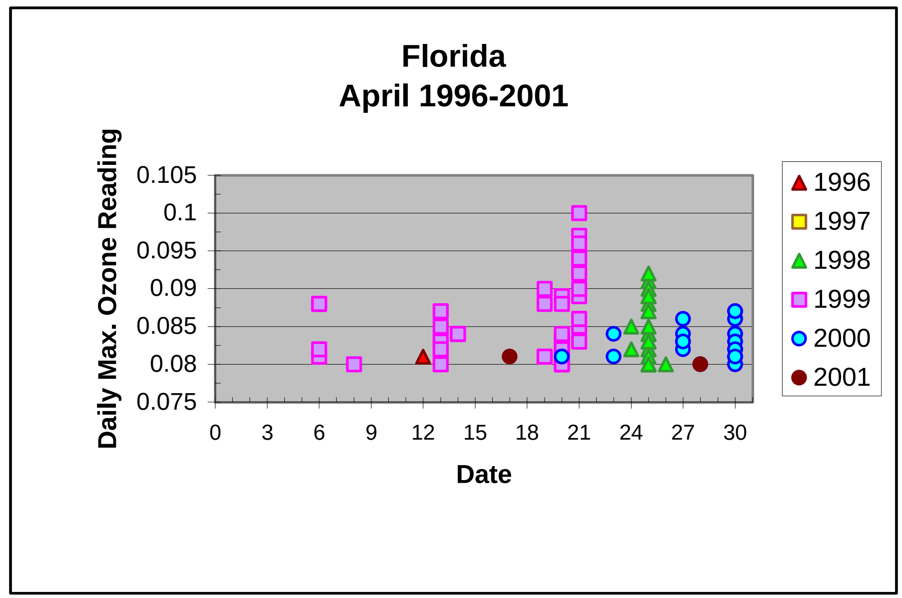

Alabama
October 1996-2001
Daily Max. Ozone Reading
0.085
0.0825
0.08
0.0775
0.075
0 3 6 9 12 15 18 21 24 27 30
Date
1996
1997
1998
1999
2000
2001



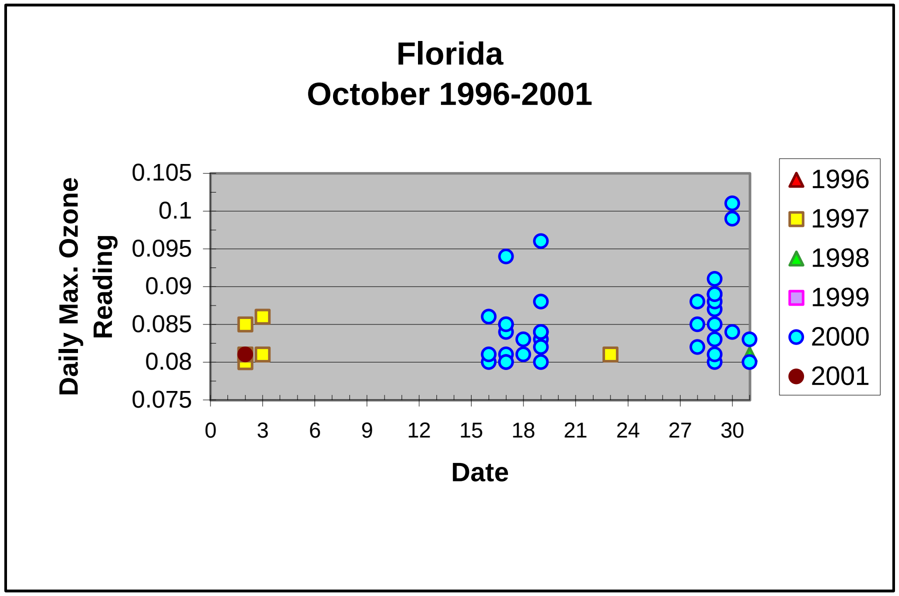
Florida
February 1996-2001
Daily Max. Ozone Reading
0.085
0.0825
0.08
0.0775
0.075
0
3
6
9
12
15
18
21
24
27
30
Date
1996
1997
1998
1999
2000
2001

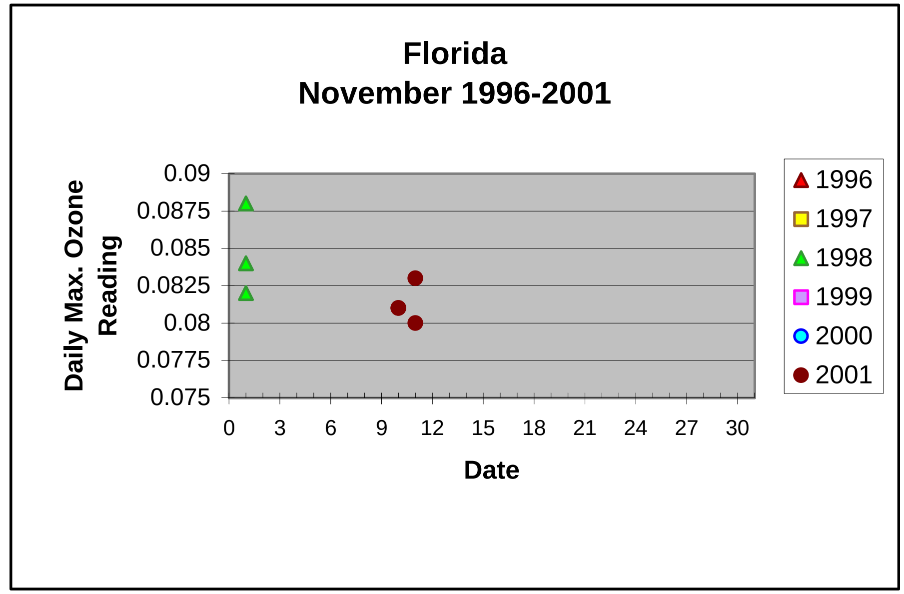


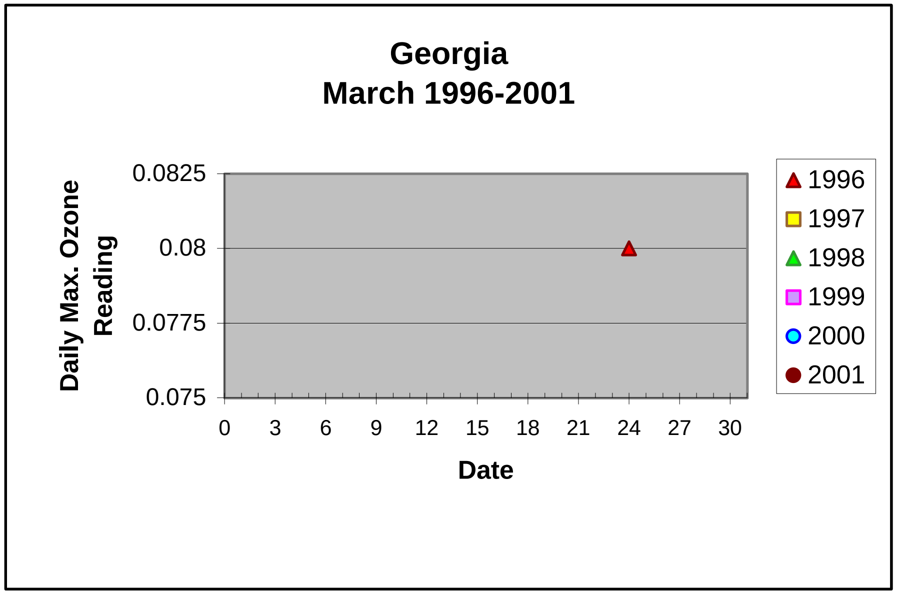
Florida
March 1996-2001
Daily Max. Ozone Reading
0.095
0.09
0.085
0.08
0.075
0
3
6
9
12
15
18
21
24
27
30
Date
1996
1997
1998
1999
2000
2001

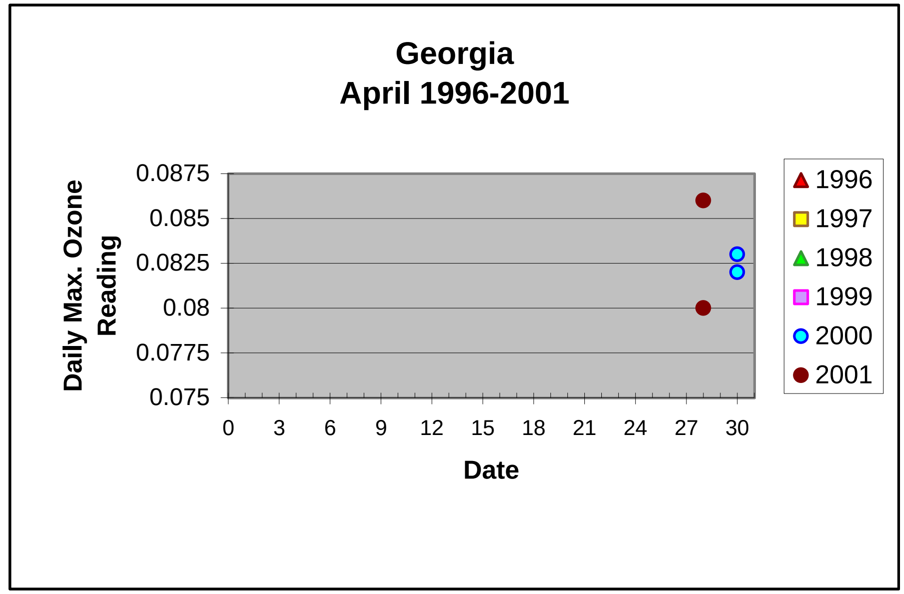


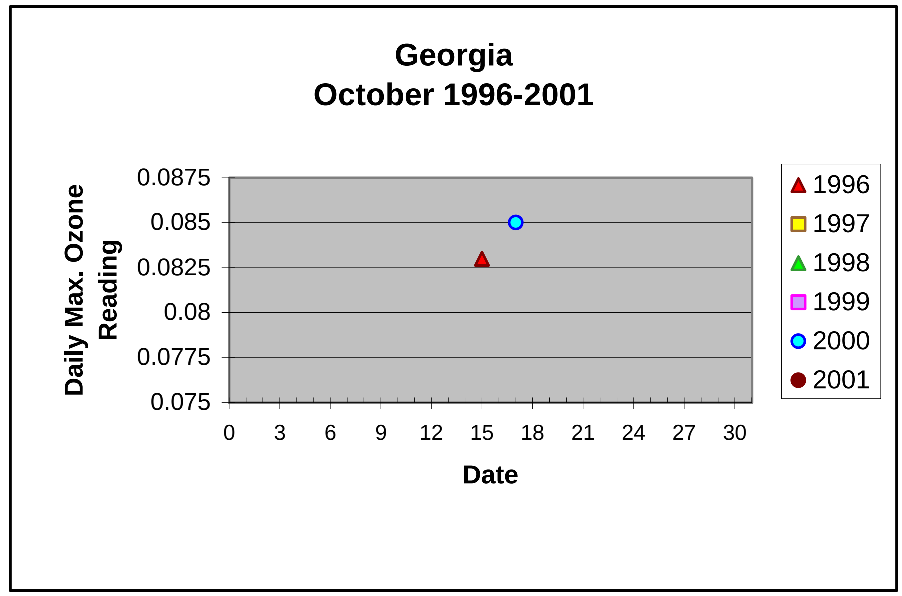
Florida
April 1996-2001
Daily Max. Ozone Reading
0.105
0.1
0.095
0.09
0.085
0.08
0.075
0
3
6
9
12
15
18
21
24
27
30
Date
1996
1997
1998
1999
2000
2001

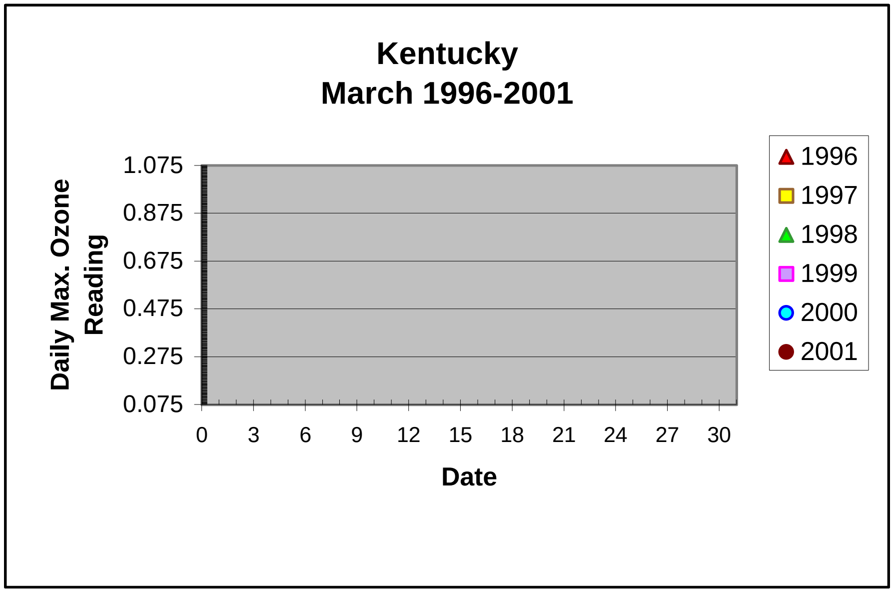

Florida
October 1996-2001
Daily Max. Ozone Reading
0.105
0.1
0.095
0.09
0.085
0.08
0.075
0
3
6
9
12
15
18
21
24
27
30
Date
1996
1997
1998
1999
2000
2001

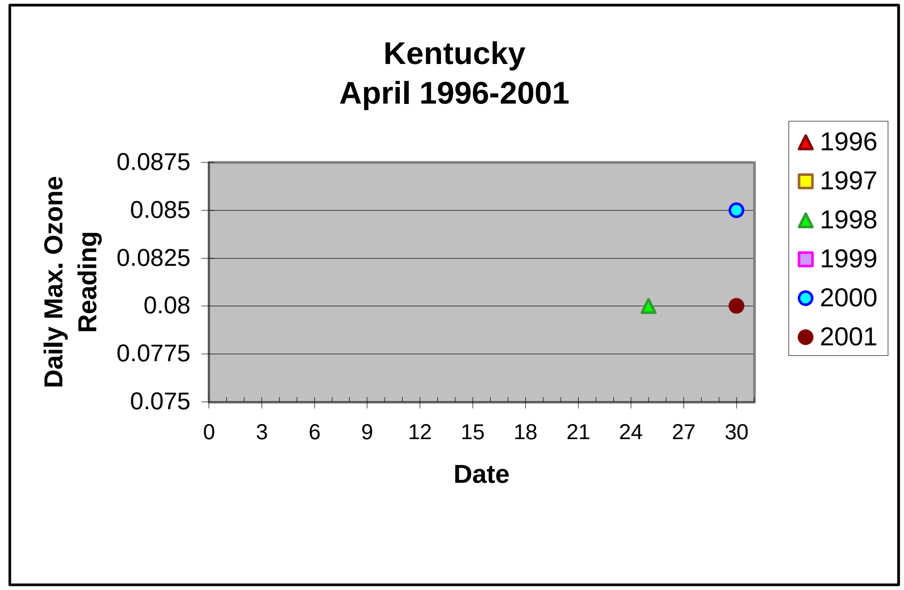

Florida
November 1996-2001
Daily Max. Ozone Reading
0.09
0.0875
0.085
0.0825
0.08
0.0775
0.075
0
3
6
9
12
15
18
21
24
27
30
Date
1996
1997
1998
1999
2000
2001

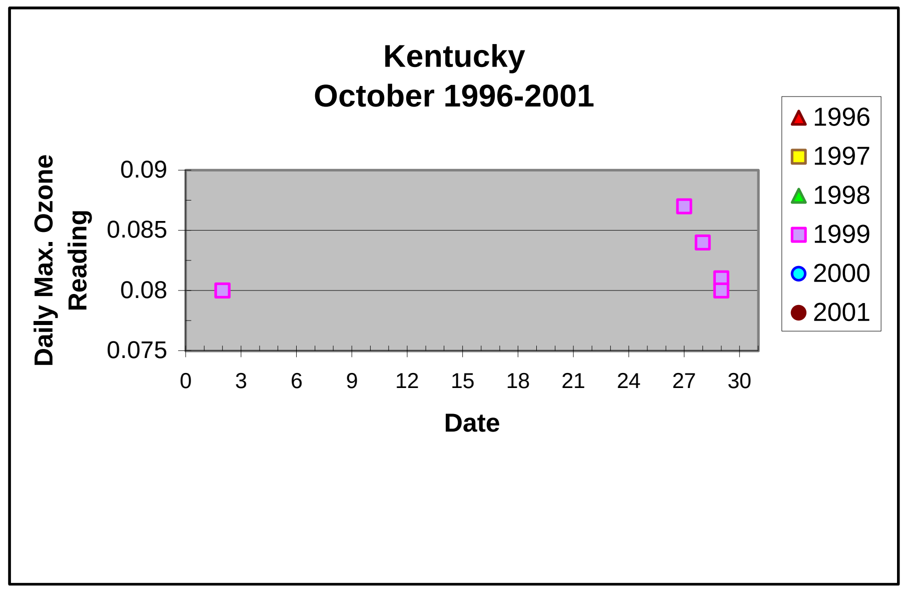

Georgia
March 1996-2001
Daily Max. Ozone Reading
0.0825
0.08
0.0775
0.075
0
3
6
9
12
15
18
21
24
27
30
Date
1996
1997
1998
1999
2000
2001

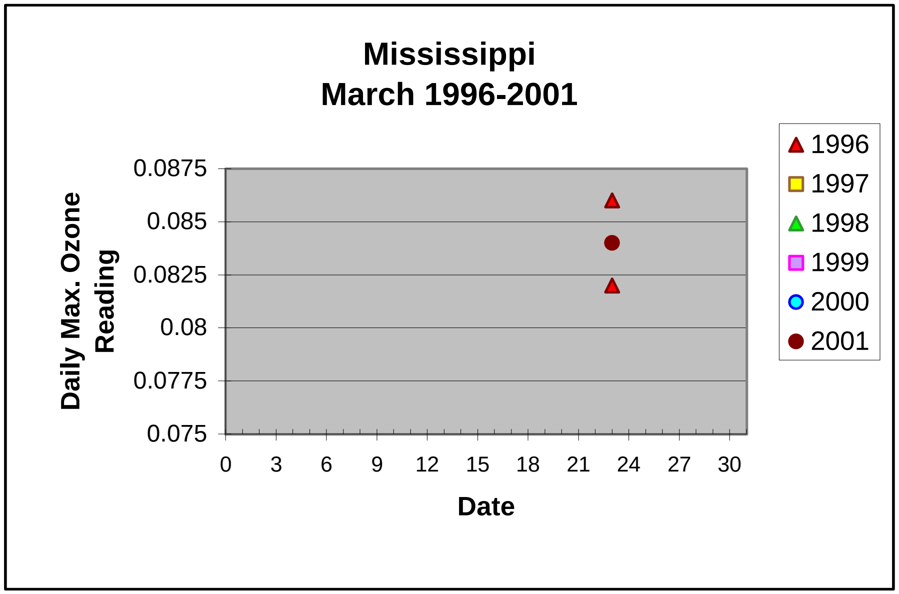

Georgia
April 1996-2001
Daily Max. Ozone Reading
0.0875
0.085
0.0825
0.08
0.0775
0.075
0
3
6
9
12
15
18
21
24
27
30
Date
1996
1997
1998
1999
2000
2001


Georgia
October 1996-2001
Daily Max. Ozone Reading
0.0875
0.085
0.0825
0.08
0.0775
0.075
0
3
6
9
12
15
18
21
24
27
30
Date
1996
1997
1998
1999
2000
2001


Kentucky
March 1996-2001
Daily Max. Ozone Reading
1.075
0.875
0.675
0.475
0.275
0.075
0 3 6 9 12 15 18 21 24 27 30
Date
1996
1997
1998
1999
2000
2001


Kentucky
April 1996-2001
Daily Max. Ozone Reading
0.0875
0.085
0.0825
0.08
0.0775
0.075
0 3 6 9 12 15 18 21 24 27 30
Date
1996
1997
1998
1999
2000
2001


Kentucky
October 1996-2001
Daily Max. Ozone Reading
0.09
0.085
0.08
0.075
0 3 6 9 12 15 18 21 24 27 30
Date
1996
1997
1998
1999
2000
2001


Mississippi
March 1996-2001
Daily Max. Ozone Reading
0.0875
0.085
0.0825
0.08
0.0775
0.075
0
3
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Date
1996
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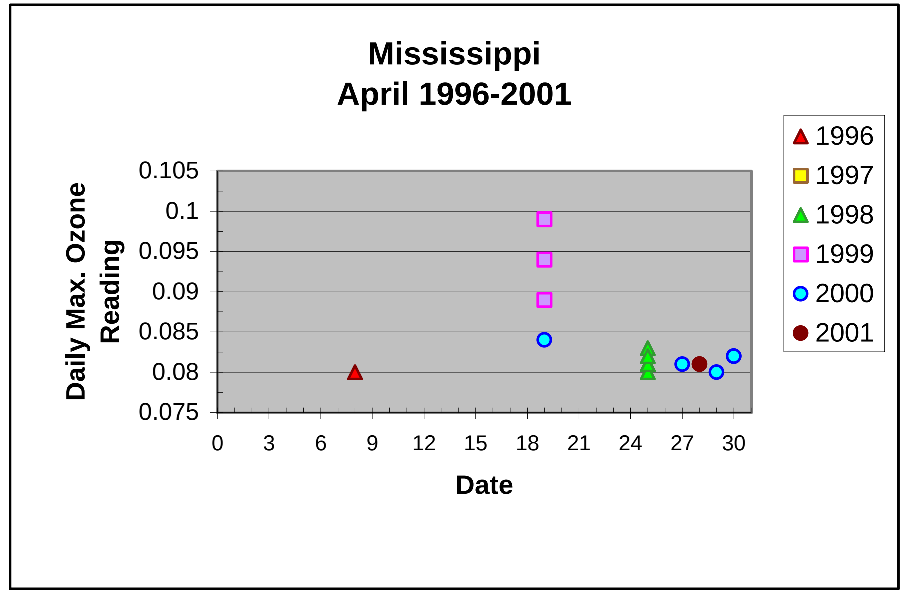
Mississippi
April 1996-2001
Daily Max. Ozone Reading
0.105
0.1
0.095
0.09
0.085
0.08
0.075
0
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Date
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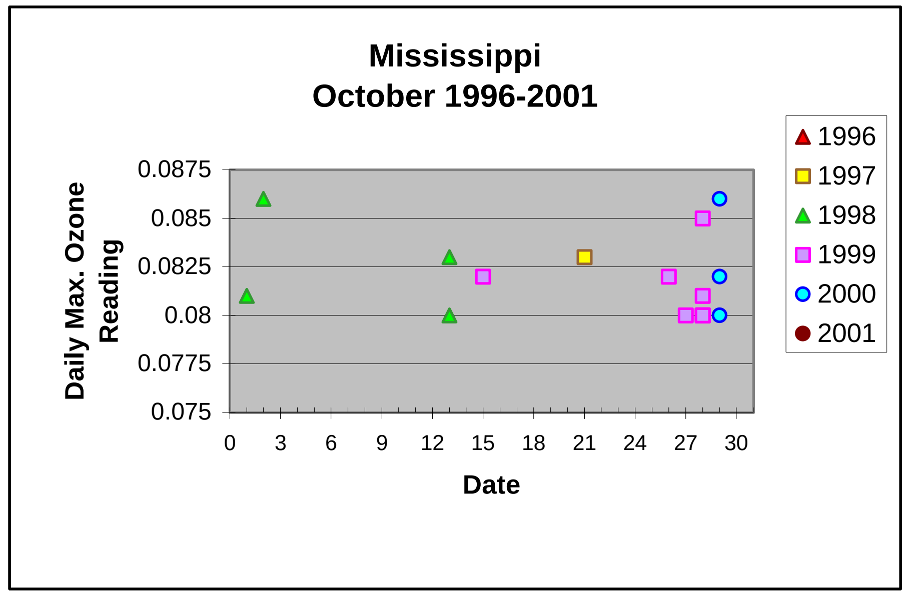
2001


Mississippi
October 1996-2001
Daily Max. Ozone Reading
0.0875
0.085
0.0825
0.08
0.0775
0.075
0
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Date
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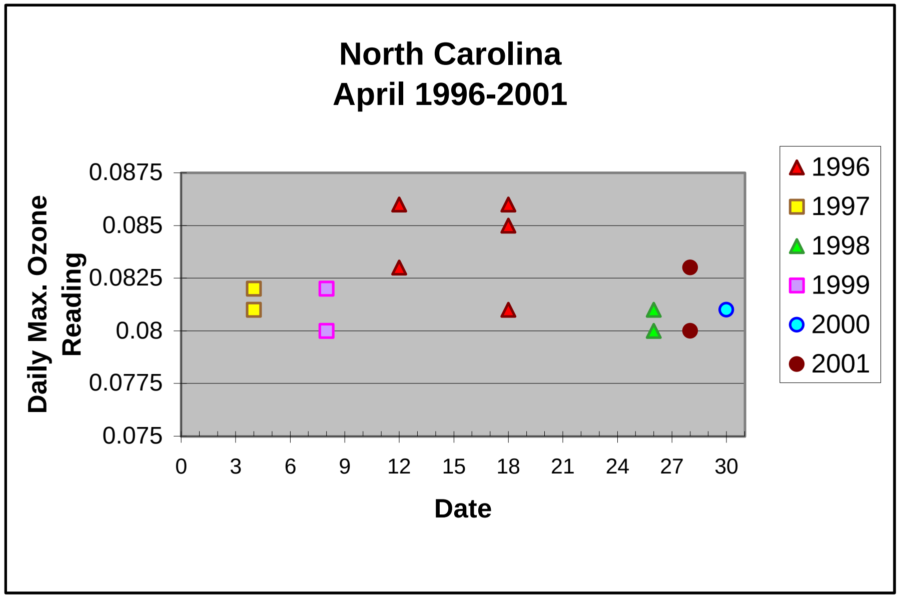
North Carolina
April 1996-2001
Daily Max. Ozone Reading
0.0875
0.085
0.0825
0.08
0.0775
0.075
0
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Date
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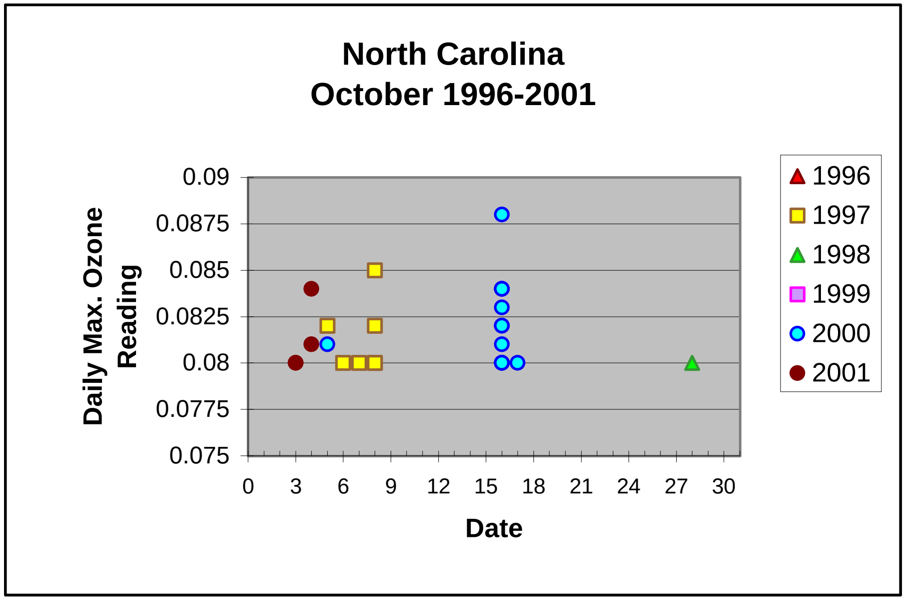
North Carolina
October 1996-2001
Daily Max. Ozone Reading
0.09
0.0875
0.085
0.0825
0.08
0.0775
0.075
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Date
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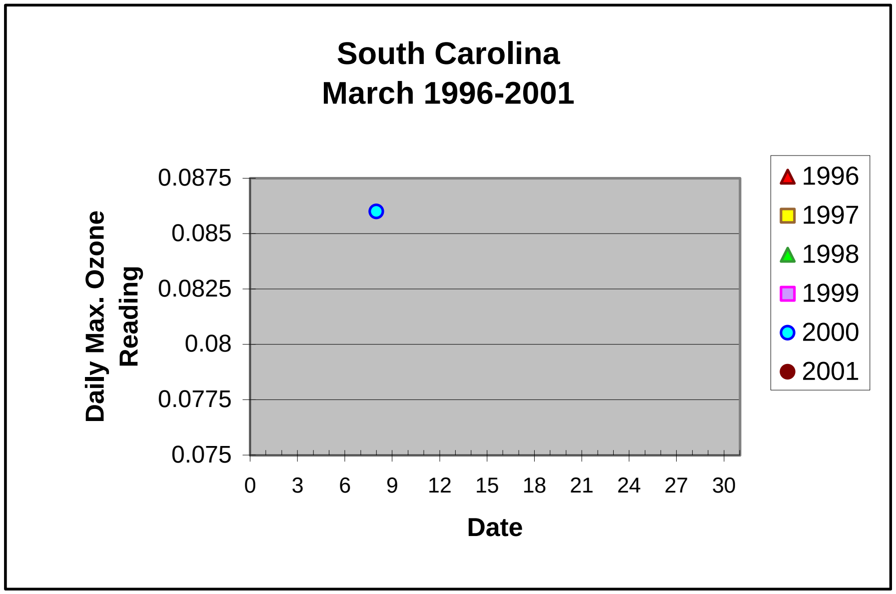

South Carolina
March 1996-2001
Daily Max. Ozone Reading
0.0875
0.085
0.0825
0.08
0.0775
0.075
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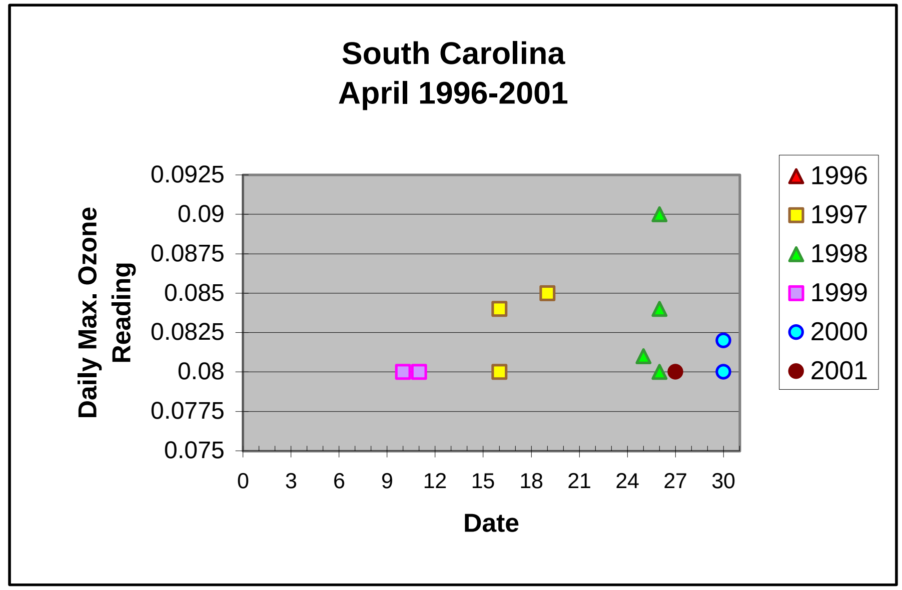

South Carolina
April 1996-2001
Daily Max. Ozone Reading
0.0925
0.09
0.0875
0.085
0.0825
0.08
0.0775
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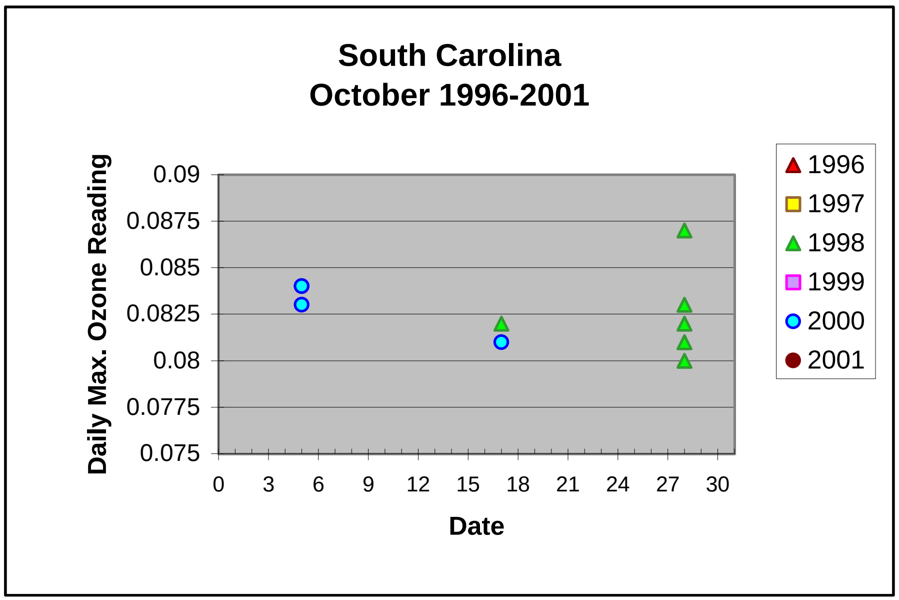

South Carolina
October 1996-2001
Daily Max. Ozone Reading
0.09
0.0875
0.085
0.0825
0.08
0.0775
0.075
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Date
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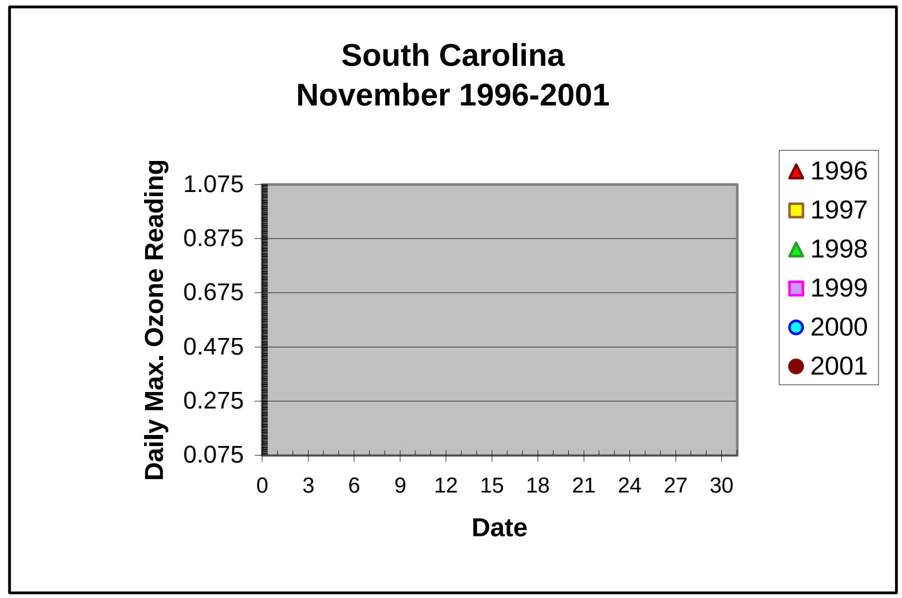

South Carolina
November 1996-2001
Daily Max. Ozone Reading
1.075
0.875
0.675
0.475
0.275
0.075
0
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Date
1996
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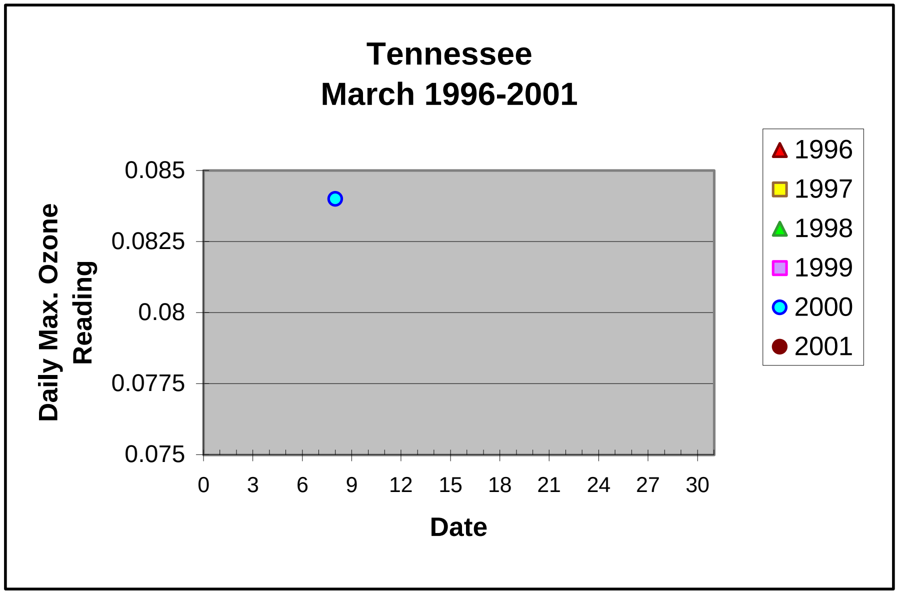
Tennessee
March 1996-2001
Daily Max. Ozone Reading
0.085
0.0825
0.08
0.0775
0.075
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Date
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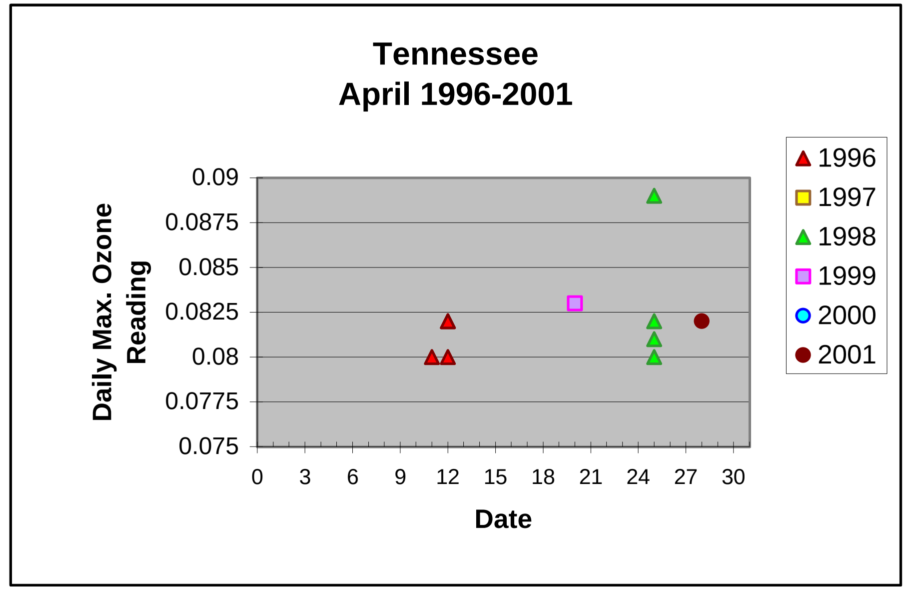
Tennessee
April 1996-2001
Daily Max. Ozone Reading
0.09
0.0875
0.085
0.0825
0.08
0.0775
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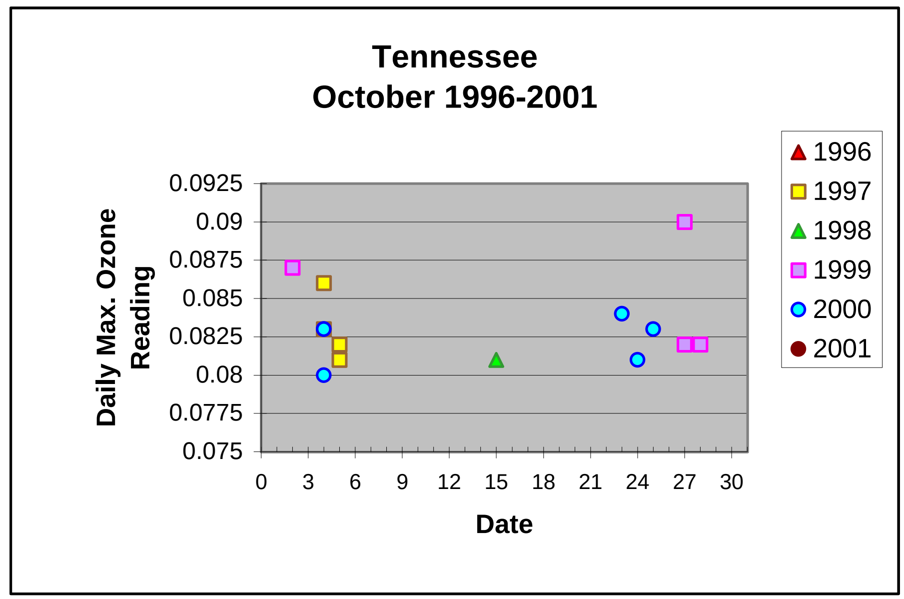
Tennessee
October 1996-2001
Daily Max. Ozone Reading
0.0925
0.09
0.0875
0.085
0.0825
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